THE IRON TRADE REVIEW

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# Tightness of Money Market

## Delays Many Projects—Inquiries From Foreign Countries Develop Into Orders Very Slowly

Financial conditions dominate the iron trade, whose dullness is more pronounced than it was a week ago. Particularly in the lull in the structural material market and in almost entire absence of buying by the railroads, is the tightness of the money market reflected. Numerous important building projects have been indefinitely delayed, including the terminal station of the Public Service Corporation at Newark, N. J., requiring 9,000 tons of steel, which had been awarded. The carrying out of this project has been stopped temporarily by the insurance company, which is depended upon to finance it.

**Prices**

In spite of the very slack demand for nearly all kinds of iron and steel products, quotations are being firmly maintained on account of the expectation of greatly improved business at a later date. Prices have not been tested, however, and concessions are likely to be made unless the demand improves soon.

**Ferro Manganese**

The ferro-manganese situation has been greatly relieved by the news that considerable tonnages are now afloat en route to this country and by sales made by the United States Steel Corporation at $85. A round tonnage of Cuban manganese ore is being offered for sale at Philadelphia.

**Pig Iron**

The dullness in steel-making pig irons has been relieved somewhat by the appearance of the Lukens Iron & Steel Co. in the market with an inquiry for from 30,000 to 40,000 tons of basic. It bought about 15,000 tons. An inquiry has appeared in the eastern market for 20,000 tons of standard low phosphorus pig iron for European delivery. The pig iron market throughout the central west is very dull. Pig iron production last month shows an increase of 41,159 tons compared with July, the total production for the month being 1,996,483 tons. The gain was due entirely to the increased activity of steel works furnaces. During the month, 11 furnaces were put in blast and the same number blown out.

**Cast Iron Pipe**

Owing to the inability to sell their securities, cities are proceeding very slowly in placing contracts for cast iron pipe. Toledo has rejected bids for 5,700 tons for financial reasons. A contract for additional segments for tunnel construction at New York, calling for 22,000 tons of iron will soon be awarded.

**Billets**

Recent English offers for billets, sheets, bars and slabs have not been very attractive to American makers and little actual selling has been done. The domestic demand is not brisk, although liberal specifications are being filed against old contracts.

**Tin Plate**

The activity of the tin plate mills has kept up the percentage of active capacity of the Steel Corporation and some of the leading independents. Wire mills are also operating at a good rate, but new business is light. A decline in the demand for plates is noticeable. Sheet prices are firm and the demand in some sections is active. The coke market is weak and indications are that the present quotations could be shaded. Scrap is reported at extremely low prices in Chicago and in the eastern territory the market is not so firm as it was a week ago.

# THE OPEN HEARTH

## Now Let Oversea Trade Move

PRESIDENT WILSON has issued an executive order suspending certain sections of the navigation laws as authorized by the bill recently passed by Congress admitting foreign-built ships to American register for service in over-sea trade. The sections suspended are first the one requiring inspection and measurement by United States government officials. The government will accept the inspection of foreign countries. The other section suspended is that providing that the watch officers must hold American licenses. This section has been suspended for a period of seven years. This is certainly a generous allowance of time and makes possible the immediate entry to American register of about 200 vessels with their present licensed officers. These vessels have been flying mainly the British and Belgian flags, though undoubtedly some of them have also flown the German flag, and it will be interesting to see how well they can compete with vessels under other flags. It is not at all probable that the owners will advance the wage scale of these officers to equal that now paid by ships that are manned by American citizens exclusively.

The experiment of this emergency legislation will be watched with great interest. The best that can be said of it is that it will open avenues of trade at once. There is no reason, as far as we know, why our over-sea trade might not be moving again, particularly to neutral countries and also to belligerents for that matter, if they do not carry contraband, or can dodge the cruisers of the contending nations. There is, however, a wide field in which they should engage without fear of molestation from any source. One of these fields is the great South American market and there is no good reason why it should not be cultivated to the utmost, especially as the war insurance bureau will assume the risk of hull and cargoes.

Our bankers, in order to supplement the efforts of our manufacturers, are arranging to establish branch banks in a number of South American cities in order to facilitate exchange, and until these branches are established, little progress can be made in extending trade to the southern republics.

## More Sops for Union Labor

THE most prominent feature of the deliberation of the Senate immediately preceding the passage of the so-called Clayton anti-trust bill was the effort to cater to the labor unions to even greater extent than had been done up to that time. That this effort was not confined to any one party is shown by the fact that Senator Cummins, of Iowa, succeeded in having adopted an amendment which aims to legalize picketing. The amendment provides that no injunction shall issue "to forbid persons from attending at any place where any such person or persons may lawfully be for the purpose of peacefully obtaining or communicating information". To what extent this rather remarkable provision will permit picketing must necessarily be determined by the courts. This is true of many other provisions of the bill. Senator Cummins also had inserted a sort of stump speech in favor of labor unions in the form of an amendment, declaring that "the labor of human beings is not a commodity or article of commerce".

Contrasted with the attitude of Senator Cummins and others, who asked special favors for labor unions is the position of Senator Pomerene, of Ohio. He delivered an extremely able speech in opposition to granting one class favors not conceded to other classes. He said that if it is conceded that restraint of trade ought to be prohibited, it makes but very little difference whether that restraint is caused by one class of citizens or by another class.

"It seems to me," said the senator from Ohio, "that it is unfair to the laboring men themselves, it is unfair to the country, it is unfair to Congress, it is unfair to the courts, to say that there is any principle of law recognized in this country which would permit the dissolution of an organization of employes unless they have been guilty of some unlawful acts. I take it that the friends of this bill would not contend for one moment that, if an organization had been once properly organized, but set out in a criminal course to do criminal

# THE OPEN HEARTH

acts, the law ought not to intervene even to the extent of using drastic measures, not to say decreeing dissolution."

In other words, we would say, but perhaps not in senatorial language, there was no common sense in providing exemption of labor unions and the exemption provision was merely a sop to the labor agitators. Senator Pomerene also calls attention to the fact that the first part of section 7 permits labor organizations to operate without any qualification, but individuals are restricted to lawfully carrying out the legitimate objects of the organizations. "Applying the usual rules of construction," said the senator, "it follows that the operation of the organization may be either lawful or unlawful, legitimate or illegitimate. Why limit the individual to lawfully carrying out the legitimate objects of the organization and place no limitation on the organization? Again, what are the legitimate objects? Why not attempt to define them? No one has attempted it. Does the word 'legitimate' not cover every attempt that may be made to accomplish their purpose? Does it mean that the commerce of the country may be entirely tied up by the efforts of some men who do not appreciate the obligation of citizenship? Does it mean that it shall be confined to efforts to obtain a reasonable wage or a wage that would be concededly unreasonable under any and all circumstances? Does it mean to apply only to the obtaining of reasonable hours, or does it permit them to demand unreasonably short hours? Does it mean they may strive for reasonably good conditions, or for conditions which it would be impossible for the average employer to bestow? It seems to me that if this is to become the law, there ought to be some attempt to explain what was in the mind of Congress when it attempted to place it upon the statute books."

Permit us to suggest that it might not look well to future generations or even to the fair-minded man of today if the members of Congress had frankly explained what was in their minds when they attempted to grant special privileges to labor unions.

In view of the very objectionable features of the Clayton bill as set forth by Senator Pomerene and others, it may be asked why senators who so seriously object to some of the provisions, voted for the bill. The explanation is, we believe, that the bill was passed because senators believed they would have to pass something and that possibly the quickest if not the best way to act would be to pass the Clayton bill and allow the courts to decide its many vague provisions. Certain it is that the final effect of the law in very important particulars will depend upon the wisdom of the courts of the country.

## Accurate Information Demanded

IT IS universaliy agreed that the present time presents unusual opportunities for the extension of American trade to foreign lands. There is, however, an immense amount of loose talk and inaccurate information in regard to trade extension, and it is certain that unless American manufacturers proceed cautiously after receiving definite and accurate information, the losses will be heavy. For this reason, we take pleasure in calling attention to the open letter addressed by Charles S. Powell, of Cleveland, to Secretary Redfield, published elsewhere in this issue, in which valuable suggestions are made as to specific facts imperatively demanded for the guidance of shippers. The consular service has improved greatly in recent years and much more can be accomplished by following such suggestions as those made by Mr. Powell. We believe that his letter will be received in the spirit in which it is written and, if it is, much good will result. Others who have had experience in foreign commerce would do well to follow Mr. Powell's example and forward helpful suggestions to Washington.

That the United States will not be allowed to have its own way entirely in capturing the export trade of Germany is shown by the efforts inaugurated by England, which, in spite of the desperate fighting in which that country is doing its part splendidly, is overlooking no opportunity to extend its export trade. And other countries are not asleep.

## Prices Present and Past

*Quotations on leading products today, average for last month, average for three months ago and average for September, 1913. Prices are those ruling in the largest percentage of sales at the dates named.*

| | Today's prices. | Average for Aug., 1914. | Average for June, 1914. | Average for Sept., 1913. |
|---|---|---|---|---|
| Bessemer pig iron, Pittsburgh.. | 14.90 | $14.90 | $14.90 | $16.65 |
| Basic pig iron, Pittsburgh..... | 13.90 | 13.90 | 13.90 | 15.09 |
| No. 2 Fdy. pig iron, Pittsburgh. | 13.90 | 13.90 | 13.90 | 14.90 |
| Northern No. 2 Fdy., Chgo.... | 13.50 | 14.00 | 14.25 | 15.00 |
| Lake Superior Charcoal, Chgo.. | 16.00 | 15.75 | 15.75 | 15.00 |
| Malleable Bessemer, Chicago.... | 13.50 | 14.00 | 14.25 | 15.00 |
| Southern No. 2, Birmingham.... | 10.00 | 10.00 | 10.38 | 11.00 |
| Southern Ohio No. 2, Ironton.. | 13.00 | 13.25 | 13.50 | 14.00 |
| Basic, eastern Pa..... | 14.00 | 14.00 | 14.00 | 15.25 |
| No. 2X Virginia furnace..... | 12.50 | 12.50 | 12.75 | 13.00 |
| No 2X Foundry, Philadelphia... | 14.75 | 14.75 | 14.75 | 16.00 |
| Ferro mang., Balti..... | 85.00 | 125.00 | 37.50 | 55.00 |
| Billets, Pbgh. & Ygn..... | 21.00 | 20.00 | 19.75 | 25.00 |
| Sheet bars, Pbgh. & Ygn..... | 22.00 | 21.00 | 20.75 | 25.62 |
| Steel bars, Pittsburgh..... | 1.20 | 1.17½ | 1.11½ | 1.40 |
| Iron bars, Philadelphia..... | 1.25 | 1.20 | 1.20 | 1.37 |
| Steel bars, Chicago..... | 1.38 | 1.30 | 1.28 | 1.58 |
| Tank plates, Chicago..... | 1.38 | 1.36 | 1.28 | 1.58 |

| | Today's prices. | Average for Aug., 1914. | Average for June, 1914. | Average for Sept., 1913. |
|---|---|---|---|---|
| Structural shapes, Chicago..... | $1.38 | $1.36 | $1.28 | $1.63 |
| Iron bars, Cleveland, local del'y. | 1.20 | 1.20 | 1.22½ | 1.41 |
| Iron bars, Chgo. mill..... | 1.07½ | 1.07 | 1.10 | 1.35 |
| Beams, Pittsburgh ..... | 1.20 | 1.17½ | 1.10 | 1.41 |
| Beams, Philadelphia ..... | 1.30 | 1.30 | 1.25 | 1.55 |
| Tank plates, Pittsburgh..... | 1.20 | 1.16 | 1.11½ | 1.40 |
| Tank plates, Philadelphia..... | 1.30 | 1.30 | 1.25 | 1.55 |
| Sheets, blk., No. 28, Pittsburgh. | 2.00 | 1.88 | 1.82 | 2.12 |
| Sheets, blue an., No. 10, Pbgh.. | 1.40 | 1.37½ | 1.35 | 1.61 |
| Sheets, galv., No. 28, Pbgh..... | 3.00 | 2.85 | 2.77 | 3.15 |
| Wire nails, Pittsburgh..... | 1.60 | 1.55 | 1.50 | 1.65 |
| Connellsville fur. coke, contr.... | 1.75 | 1.80 | 1.85 | 2.44 |
| Connellsville fdy. coke contr.... | 2.35 | 2.36 | 2.40 | 3.00 |
| Heavy melting steel, Pbgh..... | 11.50 | 11.50 | 12.00 | 12.50 |
| Heavy melting steel, east'n Pa.. | 11.00 | 10.50 | 10.75 | 12.00 |
| Heavy melting steel, Chgo..... | 9.25 | 9.75 | 9.75 | 10.50 |
| Heavy cast, eastern Pa..... | 12.25 | 12.25 | 12.50 | 13.25 |
| No. 1 wrought, eastern Pa..... | 12.50 | 12.50 | 12.50 | 14.50 |
| No. 1 wrought, Chgo..... | 8.50 | 8.75 | 8.88 | 10.25 |
| Rerolling rails, Chgo..... | 11.00 | 11.25 | 11.25 | 12.00 |
| Car wheels, Chgo..... | 10.75 | 11.00 | 11.00 | 12.50 |

(For Additional Prices See Page 504.)

# Block of Basic Pending in East

### Lukens Iron & Steel Co. Expected to Close for a Round Tonnage

Philadelphia, Sept. 8.—Negotiations have been opened for a round block of basic iron by the Lukens Iron & Steel Co. and it is believed this buyer may close for 30,000 to 40,000 tons, mainly for delivery over the first quarter or first half. Some tonnage may be taken for this year. There have been no transactions in basic iron in the east for a number of weeks and the market nominally has been quoted around $14, delivered. With some actual business in sight, makers have stiffened their prices. While $14.25, perhaps $14, delivered, might be done for early delivery, it is indicated that $14.50, delivered, will be the minimum for shipment after Jan. 1, and it is not altogether certain that this figure can be done. This demand for basic has brought to the iron market in this district its only development of importance; otherwise the situation has remained dull and uninteresting. A Delaware river pipe maker bought 2,000 tons of No. 2 southern for September delivery at $10.25, Birmingham, or $14.45, delivered. The Baldwin Locomotive Works, which was inquiring for 1,000 tons of low grade iron, has placed this order. Another former inquiry for 1,500 to 2,000 tons remains open. A Trenton consumer wants 500 tons of foundry and the Southern Railway Co. has out a new inquiry for 400 tons. A Waynesburg, Pa., shop recently took 500 tons of Virginia. Foundry iron prices are unchanged, No. 2X being quoted at $14.75 to $15.00, Philadelphia. Virginia brands, moving slowly, command usually $12.50, furnace, for No. 2X, with $12.25, furnace, occasionally done for prompt. The change in Virginia freight rates to $2.75 to Philadelphia and to $2.25 to Baltimore, effective Oct. 15, promise to have small influence, as they leave these brands still noncompetitive against eastern Pennsylvania irons. Small sales of standard low phosphorus at $21.50 are reported.

#### Inquiry for Low Phos

New York, Sept. 8.—European consumers of standard low phosphorus iron, who usually draw their supplies from English or Scotch makers, have inquired of makers in this country for a block of 20,000 tons for shipment over the rest of the year. A cargo is desired in the near future. It is specified that the iron shall be free of copper. This is the largest foreign inquiry for iron that yet has been open to domestic sellers since the war. Eastern interests now operating one furnace on low phosphorus state they will put on additional capacity if sufficient demand for this grade develops from abroad. An inquiry for 4,000 tons of off Bessemer is reported to be current for a large machinery builder in Russia who asked for a similar amount several months ago. Locally, the market remains heavy and lifeless. Some eastern foundries are figuring with eastern furnaces on the approximately 15,000 tons of iron required for an additional lot of 22,000 tons of tunnel segments now pending for subway construction in this city. Some Buffalo makers who have been holding for $14, furnace, for No. 2X now are less rigidly adhering to these schedules and the Buffalo market more squarely is quoted from $13 to $13.50, furnace. Several thousand tons of Buffalo iron for New England delivery recently have been sold at $13.50, furnace. It is a fact, however, that some small sales of Buffalo iron recently were sold at $14, furnace. The tidewater market on No. 2X remains quotable at $14.50 to $14.75, for No. 2X. The International Steam Pump Co. continues to put out some small inquiries for eastern plants.

#### Inquiry Light at Buffalo

Buffalo, Sept. 8.—While there is a better feeling on the part of many melters in the Buffalo district, the furnaces report that the users have

(*For complete prices see page* 504.)

assumed a waiting attitude, causing the inquiry to become lighter than has been felt in several weeks. One producing interest reports a fair number of inquiries for lots involving moderate tonnages. Specifications continue good. Melters are taking their quotas of iron with the exception of agricultural implement makers and those engaged largely in the European export trade.

On the 3,000-ton lot of malleable under negotiations last week, decision has been suspended for the present.

Prices are firmer. No. 2X foundry is being quoted at $13.25 to $13.75; No. 2 plain the minimum has been raised from $12.75 to $13.25; gray forge is being quoted at $13; malleable, $13.25 to $14, and basic at $14 to $14.25. Iron under $13 seems to have disappeared for the present.

The general tonnage of charcoal iron at this end of the lake is fair in volume, but the popular brands are becoming scarce, due to the demand from users and the reduction in the production in the Lake Superior region.

### Pittsburgh Pig Iron Quiet

Pittsburgh, Sept. 8.—The pig iron market in western Pennsylvania and eastern Ohio borders on stagnation, and dealers do not expect to witness any change in the situation until the return of normal trade conditions in this country. Although blast furnace managers are hopeful about the future, it is apparent that the war fog has cast a gloomy shadow over the present. Bidders on about 25,000 tons of cast iron segments for tube work in New York, as announced in last week's issue of THE IRON TRADE REVIEW, have entered the market for a corresponding tonnage of pig iron, negotiations for which probably will close within the next fortnight. Prices of steel-making grades and foundry irons are unchanged in position.

### Very Dull at Cleveland

Cleveland, Sept. 8.—The pig iron market in the Cleveland district is exceedingly dull. With the exception of the inquiry from the Wheeling Mold & Foundry Co., mentioned last week, no inquiries of any considerable tonnage have appeared for several weeks. The melt continues about the same, but neither buyers nor sellers are anxious to contract for delivery after Jan. 1.

### Alabama Iron Higher

Cincinnati, Sept. 8.—Southern iron has gradually attained a higher level in Alabama and the minimum figure in this state is now $10.25, Birmingham basis, for No. 2 foundry. A few furnaces are asking $10.50, Birmingham basis, for this grade, but plenty of iron is available at the lower figure. Several furnaces in this state have refused offers of $10, Birmingham basis, for No. 2 foundry within the past few days. In Tennessee, southern No. 2 foundry is ranging in price from $10 to $10.50, Birmingham basis.

Southern Ohio No. 2 foundry and malleable iron is drifting along at $13, Ironton basis, as the minimum quotation for the last quarter. The market is very slow and good inquiries are exceptionally scarce. Dealers are occasionally being asked to quote prices on small lots, but in a number of cases these are merely feelers sent out to test the market. Several inquiries are still pending, but they are so situated that dealers in this city do not expect to contract for any of them. Among these are 500 tons each from the Columbus Malleable Iron Co., Columbus, O., and the American Malleable Iron Co., Marion, O., 4,000 tons of foundry iron from the Massillon Iron & Steel Co., Massillon, O., and 500 tons of malleable Bessemer iron from Columbus, O.

### Inactive at Chicago

Chicago, Sept. 8.—September starts as a quiet month in the pig iron market in this vicinity and the few sales made here and there are for actual needs to those who have delayed buying until they were assured they would find an outlet for their product. There is little promise of revival of interest in the pig iron market until fourth quarter and dealers expect the month to be uneventful.

Buyers are inquiring for prices on next year's iron, but constantly refuse to discuss prices above present quotations, apparently believing they will be able to buy at least as cheaply as at present. No move is being made by melters to obligate themselves for more iron than they need for the immediate future, indicating they believe prices will not advance.

No. 2 foundry and malleable is obtainable at $13.50 to $14, Chicago furnace, and southern No. 2 foundry at $10.25, Birmingham.

### Very Little Inquiry

St. Louis, Sept. 7.—Pig iron continues dull in the St. Louis district, inquiries being confined to 100-ton lots. One inquiry for 100 tons was received this morning for last quarter delivery. Local agents do not see anything on the horizon that looks optimistic. Southern No. 2 is quoted at $10.50 to $10.75, Birmingham; northern iron at $14, Chicago furnace, and $13.50, Ironton.

### Looking to South America

Birmingham, Sept. 7.—Developments of last week have caused local makers to turn their attention to South America and to consider seriously the possibility of marketing Alabama iron there. The announcement that branches would be established at Buenos Ayres and other large cities of South America by the National City Bank of New York was received with much gratification. This step removes one of the most serious obstacles to trade with the countries to the south, as it solves the question of finance. South American purchasers expect from 60 to 90 days' accommodation and this, in addition to the lack of transportation facilities, made it practically impossible for Birmingham producers to market their iron as cheaply as Europe. With American banks, iron men here believe the ships will be early available and it is stated that one large maker is already quietly preparing to enter the field.

The immediate effect of the establishment of branch banks will be felt more in the coal trade than in iron and steel. Two cargoes of coal have been shipped to South American ports by the Roden Coal Co. Iron men believe if Alabama coal can be marketed successfully, pig iron can be, especially as there are no offerings from Europe.

While the local pig iron market has been quiet, the undertone is strong and brokers expect business to come with a rush when it opens. The volume of small orders has held up remarkably and the sales for the week make a respectable total. No. 2 is usually quoted at $10.25 for immediate delivery and $10.50 for fourth quarter delivery. Few sales have been reported at $10. Inquiries for fourth quarter iron are heavy and there has been no decrease in the number of furnaces in blast.

*(For complete prices see page 504.)*

## Lake Erie Ore Receipts

Out of a total shipment of 5,869,477 tons of ore during August, 4,740,243 tons were received at Lake Erie ports, distributed as follows:

| Port. | Aug., 1914. |
|---|---|
| Buffalo | 587,869 |
| Port Colborne | 46,641 |
| Erie | 45,003 |
| Conneaut | 1,113,088 |
| Ashtabula | 964,511 |
| Fairport | 302,552 |
| Cleveland | 1,094,914 |
| Lorain | 267,916 |
| Huron | 107,315 |
| Sandusky | ..... |
| Toledo | 118,078 |
| Detroit | 92,356 |
| Total | 4,740,243 |

# Sheets Strong in East

## And Holding Their Own Very Well in Other Parts of the Country

Pittsburgh, Sept. 8.—The market for steel sheets has suffered no ill effects from the stupendous war that is sweeping over Europe. As previously noted, last month was one of the most satisfactory since the early part of 1913, and specifications have been coming out at a good rate the last seven days. Prices, if anything, are stiffer than a week ago, although shading has not entirely disappeared in all cases for prompt delivery. The American Sheet & Tin Plate Co. is operating sheet mills at about 75 per cent capacity. The activity of the sheet market has increased the general average of mill operations in this district.

### Prices are Strong

Cincinnati, Sept. 8.—The sheet market continues good and prices are strong. Specifications are principally on new business, which is coming from all parts of the country and mills are usually refusing orders for shipment beyond October. The sheet business is by far the best of any in the iron and steel line in this territory. Black sheets No. 28 gage are quoted at 2.15c, galvanized No. 28 gage at 3.15c, and blue annealed No. 10 gage at 1.60c, all Cincinnati basis.

### Sheets Remain Firm

Chicago, Sept. 8.—The market for steel sheets apparently is stronger than for any other finished steel material. No. 28 gage black and galvanized are quoted at 2.18c and 3.18c, respectively, Chicago mill, and mill books are reasonably well filled for several weeks ahead. Recent advances of several dollars per ton are being maintained and while the volume of new business now is small, specifications on previous contracts are being received steadily.

### Cutting by Middlemen

Cleveland, Sept. 8.—Mills seem to be adhering to 1.45c, mill, for No. 10 blue annealed, 2c on No. 28 black and 3c on No. 28 galvanized, but their agents report that some business is being taken from them apparently by middlemen at concessions of $1 or $2 per ton. The demand for sheets in this territory is very moderate.

### Sheets Strong in East

Philadelphia, Sept. 8.—Both light and heavy sheets remain in good demand with eastern Pennsylvania makers. Stove works now are specifying heavily against contracts for the lighter gages and one of the leading eastern mills is so sold up that it is declining new business. In the heavier sizes blue annealed, new inquiry is good and the mills continue to close business at 1.65c, Philadelphia, or 1.50c, Pittsburgh, for No. 10 gage. Some contracts to the end of the year are being made upon this basis.

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Puddling furnaces of the A. M. Byers Co., Pittsburgh, at Girard, O., will be operated at full capacity this week.

# Ferro Situation Easier

## Heavy Shipments From England Now Afloat—Corporation Selling at $85

New York, Sept 8.—Heavy shipments of ferro-manganese from England to this country to be applied against contracts upon which the buyers have assumed the extra freight and insurance risks, now are afloat. It is estimated, on competent authority, that the quantity now enroute may total 8,000 to 10,000 tons. The Quernmore and Graciana both have large tonnages on board and there are odd lots on other steamers. Further shipments also are leaving England. Some tonnage now afloat is expected to arrive at eastern ports the present week and the remainder by Sept. 20. The Quernmore is due at Baltimore today or tomorrow. The easier condition in ferro-manganese for early delivery continues more pronounced and sales the past week have been light. The market remains quotable at $85 to $100, seaboard. A few small sales at $100, seaboard, were closed in the week and, as previously reported, the Steel Corporation has booked some tonnage at $85, Pittsburgh. Sales of 500 and of 200 tons for early delivery made by the Steel Corporation, are noted. It is apparent that while the Steel Corporation is squarely in the market as a seller, it is not actively soliciting business, but is willing to meet the shortages of consumers as they are brought to its attention. There have been no further developments in the several projects which have been under consideration for the making of merchant ferro-manganese in this country, the big question remaining the ability to get a permanent supply of manganese ore at the right price. Some of these proposals have been abandoned but others still are under consideration. The inquiry for 10,000 to 12,000 tons of domestic spiegeleisen for shipment to Australia, which appeared a week ago, as reported, remains unsatisfied.

### Not So Acute

Pittsburgh, Sept. 8.—Announcement last week that the Steel Corporation had again entered the market as a seller of ferro-manganese tended to relieve the situation to a considerable extent, and the market has not been so excited as previously. So far as can be learned, however, no sales of 80 per cent material have been made this week in this district, either by the Carnegie Steel Co. or foreign sellers. This alloy has been offered for fourth quarter delivery at $85. Fifty per cent and lower grades of ferro-silicon are comparatively quiet.

(*For complete prices see page* 504.)

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# Cuban Ore

## Of Manganese Grade Being Offered in This Country

New York, Sept. 8.—Cuban manganese ore now is being offered in the market in considerable quantity. As reported, a Philadelphia merchant controls the selling of 30,000 tons for forward delivery, which is understood to be held at 30 cents per unit of manganese at tidewater. A stray cargo of Indian manganese ore, 5,000 to 7,000 tons, which may be diverted to this country, was offered in the week at 30 cents per unit of manganese at Baltimore. The final cargo of Wabana, Newfoundland, iron ores, to fill out old contracts for eastern Pennsylvania furnaces, arrived at Philadelphia in the week. This ore was carried over from 1913 contracts, as there have been no sales this year. Further cargoes of Swedish ore from Narvik are arriving at Philadelphia. Eastern furnaces still maintain a listless attitude toward ore purchases.

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**Work Resumed.**—Operations have been resumed by the Steel Company of Canada on the construction of its new plant at Fort William, which was started last year, but stopped owing to dull times. Manager J. O. Callaghan states that the work will be finished by Dec. 1.

# Low Prices in Plates

## Said to Have Been Made By One Eastern Maker in Export Orders

Philadelphia, Sept. 8.—A falling off in new business again is being felt by eastern Pennsylvania plate makers after the recent several days' spurt. Fresh orders now are more spread out and they do not represent the tonnage they formerly did, as they largely are small. Railroad orders signally are lacking. Some eastern plate mills made a good record for tonnage produced, last month, one of them turning out almost 90 per cent of output, but under present conditions they have little hope of duplicating these marks this month. Pittsburgh mills will furnish about 2,000 tons of plates for an Allegheny river bridge for the Pennsylvania railroad, upon which eastern makers figured. A lot of 900 tons for tunnel shields in New York City remains open. Prices are unchanged at 1.30c to 1.35c, Philadelphia, or 1.15c to 1.20c, Pittsburgh. Extremely low quotations are said to have been made by one eastern maker on export orders.

### Plate Specifications Fall

Pittsburgh, Sept. 8.—Failure of the market to recover from the mental and financial shock caused by the outbreak of hostilities abroad has resulted in a falling off of activity in domestic trade. Manufacturers of plates, in particular, have experienced a decided decrease in demand. Specifications have not been coming out so freely as a few weeks ago, and new demand is almost inconsequential. Operating schedules of finishing mills, particularly those making plates, shapes and bars, have been reduced about 5 per cent the last 10 days, and it is conservatively estimated that mill operations in this district do not exceed 65 per cent of capacity. So far as can be learned, the 1.20c figure for third quarter shipment is being adhered to in all instances.

### Unusually Dull

Chicago, Sept. 8.—The market for steel plates apparently is affected by the quiet period to a greater degree than other finished steel products. Failure of railroads to contract for cars is responsible for this in part and other lines of manufacture using plates also are quiet. Although makers generally claim no business is being done under 1.38c, Chicago, it has been claimed that plates have been available at 1.33c, Chicago, within recent days, but this has not been verified.

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# Steel Bars

## Not in Active Demand, But Prices Are Firmly Held

Chicago, Sept. 8.—With general curtailment in many lines of business, consumption of steel bars is considerably lessened and this effect is being felt by mills. Business apparently is at a standstill and so little is offering that there is no incentive to shade the prevailing quotation of 1.38c, Chicago, as it is not thought lower figures would bring out additional tonnage. Makers have been furnishing material at so close to the cost line they believe they are entitled to present figures on whatever is offering.

Practically all contracts for bars and other forms of finished steel expire at the end of September, as practically no contracting has been done for the final quarter. Leading producers believe the tonnage under contract will be practically cleared up at the end of the month or at least will be under specification and delivery will be made early in fourth quarter. Probably less tonnage under contract will be carried over than is usual at the turn of the quarter.

### Bar Sales Are Light

Philadelphia, Sept. 8.—New steel bar business continues to run light in this territory, a few small sales are being closed and they indicate a firm condition of the market at 1.35c, Philadelphia, or 1.20c, Pittsburgh. Contracts are being specified fairly well, though they were not up to the expectations of some mills during the final few days of August, and the cancellations with some mills of untaken August tonnage were heavier than had been anticipated.

### Few New York Orders

New York, Sept. 8.—The usual report of makers of steel bars is that there is little new business being done at the present time. Specifications in August in this district were very fair and September shows only a slightly less tonnage. A lot of 2,100 tons of reinforcing bars for Binghamton, N. Y., is reported to have been placed with a Pittsburgh mill. Prices on steel bars, while little tested, appear firm at 1.36c, New York or 1.20c Pittsburgh.

(For complete prices see page 504.)

### Quiet at Pittsburgh

Pittsburgh, Sept. 8.—Despite inquiries from foreign countries, the bar steel market in western Pennsylvania and eastern Ohio is quiet. Specifications against contracts have fallen off to a slight extent, and new buying is of little consequence. On the little new tonnage sold, makers have obtained 1.20c, for this quarter. Bar iron is quiet, and prices have not been tested.

### For Early Delivery

Buffalo, Sept. 8.—Few inquiries for bars cover deliveries beyond the first of the year. There does not seem to be a disposition on the part of the consumers at this time to contract beyond early needs. Prices are holding firm. A contract has been placed for 200 tons of reinforcing bars for work on the Erie barge canal by the state of New York. Deliveries are to be made over the next 60 days.

### Bar Iron is Steady

Chicago, Sept. 8.—No change is apparent in the situation at Chicago as to iron bars. The quotation remains 1.10c, Chicago mill, for the ordinary run of business, with specifications containing attractive extras commanding 1.07½c. Practically no contracts for iron bars are now in force and the business is made up entirely of prompt specifications. The aggregate of this is sufficient to keep mills running at almost capacity and signs are apparent of conditions becoming more active.

### Hoops, Bands, Shafting Quiet

Pittsburgh, Sept. 8.—Specifications against contracts for hoops, bands and cold rolled shafting have fallen off slightly this week, but prices appear to be firmly maintained. New demand is light. The cotton tie season is practically at an end.

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The Commonwealth Steel Co., Granite City, Ill., has just sent a repeat order for creosoted block flooring to the Ayer & Lord Co., Chicago. It is for 2,200 square yards of flooring, following an initial order for 1,000 square yards.

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The Carnegie Steel Co. has applied for a permit in Boston for the erection of a frame office building at 176 Lincoln street, Brighton, Mass.

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For the first time in several weeks the American Sheet & Tin Plate Co. is operating its works at Farrell, Pa., at full capacity.

# Low Record for Scrap

## Made in the Chicago District—Recent Firmness Not Maintained in the East

Chicago, Sept. 8.—Scrap iron and steel in the Chicago market is registering a record for low prices. It is believed the quotations at present nominally representing the market are as low as any within the memory of dealers now active. It may be that an item here and there is not at the lowest point, but on the average this is true. Practically the only tonnage moving is an occasional lot which a dealer finds himself forced to dispose of and usually he takes whatever is offered by the consumer. Few sales other than those forced by need of money on the part of the holders are being made.

The C., M. & St. P. railroad has a list before the trade offering 2,700 tons, the Wabash 1,000 tons and the Queen & Crescent 75 tons.

### No St. Louis Buying

St. Louis, Sept. 7.—Because of the fact that the mills in the St. Louis territory have not been buying scrap on account of large tonnages on hand, dealers are refraining from purchasing additional supplies and await the consumption by the mills of the stocks on hand before expecting better prices. There are no lists out today.

### Doesn't Pay to Collect

Cincinnati, Sept. 8.—The demand for iron and steel scrap has continued at a minimum for so long a time that dealers have found it necessary to grant large concessions in many cases before even small sales could be made. The accumulation in the rural districts is increasing because it is not profitable to gather and bring it to the city at the prices dealers will pay at the present time. No general level of prices is being considered here, as quotations on each individual sale are being governed by surrounding conditions. Rolling mills, which are the largest users of scrap in this territory, appear to be well supplied for several months.

### Buffalo Market More Active

Buffalo, Sept. 8.—An improved demand is reported in some lines in the Buffalo district and a more active market, generally, than existed a week ago. This is particularly true of turnings and borings and No. 1 railroad wrought and No. 1 railroad machine cast scrap. There is not much activity in heavy melting steel at the present time, except to fill orders from the valley. The leading local user is a light buyer at the present time. Old iron axles continue to be quoted at $19.50 to $20, even though one purchaser claims they are obtainable at $18.50 to $19.

### Eastern Scrap Not So Firm

Philadelphia, Sept. 8.—Some reaction from the recent firmer condition of the eastern Pennsylvania scrap market has appeared and the situation does not seem as strong as a week ago. The yards and small dealers have been holding for higher prices, and have hindered the brokers from making sales. One steel works which paid $11, delivered, for some lots of heavy melting steel now will offer but $10.50, delivered, which is the general level of buyers' offers. Borings and turnings are the grades which seem to have gained rather than lost strength, as they are scarce. Some rolling mills have been buying these grades at $8.50, delivered, and one sale was made at higher than $8.75, delivered. Small sales of re-rolling rails at $12, car wheels at $11 and iron axles at $20, all delivered eastern Pennsylvania, are reported. August railroad lists brought about the same prices, excepting heavy melting steel, which netted $11.

### Not as Firm

New York Sept. 8.—New business is not so active and the undertone of the market does not appear as firm as recently. One of the leading eastern Pennsylvania mills which has been paying $11 for heavy melting steel, now is out of the market. Other eastern mills, however, will offer up to $11, delivered, for steel, and brokers still are paying as high as $9.20, New York, for this grade. Holders of scrap still are reluctant to sell their stocks at current values, and this fact is restraining brokerage transactions. Stove plate has been sold at $10, delivered eastern Pennsylvania.

# Cities Buy Little Pipe

## On Account of Inability to Sell Bonds—Toledo Rejects Bids on 5,700 Tons

Chicago, Sept. 8.—Inability of municipalities to dispose of their bonds is having a decided effect on the cast iron pipe market in the Chicago district. Contrasted with the lack of business from cities and large public service corporations, the smaller water and gas companies appear to be making extensions freely and routine business from contractors is up to the average.

Toledo has found difficulty in financing its extension and bids asked on 5,700 tons have been rejected and checks returned. The intake at Highland Park, Mich., involving 600 tons, has been awarded to a contractor and the tonnage undoubtedly will go to the United States Cast Iron Pipe & Foundry Co. The same interest has been awarded 1,200 tons at Kansas City, Mo.

### More Segments for New York

New York, Sept. 8.—Another lot of cast iron segments, estimated at 22,000 tons, for rapid transit tunnel construction in the metropolis now is being bid upon by foundries, both in the east and middle west. This requirement is for tunnel work on the Brooklyn side and is in connection with a subway section, the general contract for which was awarded to Flynn & O'Rourke Co., Ltd., about ten days ago, as reported at the time. This same contractor some weeks ago, divided a contract for 80,000 tons of segments between the Wheeling Mold & Foundry Co. and the New York Car Wheel Co. for East river tunnels connecting lower Manhattan and Brooklyn. Activity in the eastern cast iron pipe market is not very brisk. Orders are smaller and inquiries are in reduced number. Prices are low and soft. The District of Columbia will take bids Sept. 15 on 1,000 tons of 8-inch and Yonkers, N. Y., is in the market for 320 tons of 8-inch. Export trade in cast iron pipe is developing slowly, because of transportation and financial uncertainties, particularly the latter. As noted, inquiries are in the market for lots for Brazil, Equador and Cuba. The financing of these orders continues to hold back their placing.

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Reports that the installation of a wire mill is being contemplated at the plant of the Republic Iron & Steel Co., Youngstown, are officially denied.

(*For complete prices see page* 504.)

# Projects Are Postponed

## On Account of Financial Conditions and Structural Awards Are Not Numerous

Chicago, Sept. 8.—Considerable disappointment is being met in the market for structural shapes, as numerous projects well under way have been delayed in the face of business uncertainty caused by the European war and its effect on securities. The bridge over the Ohio river at Metropolis, Ill., which was already under contract, has been delayed for a year and a movement which promises fruition is under way to delay the Union depot terminal improvements in Chicago for several years. These curtailments are simply large examples of what is going on in a less marked degree in smaller affairs.

Structural shapes are still quoted by all interests at 1.38c, Chicago, and in the face of small volume of business this price remains steady.

Structural lettings the past week have been for small tonnages for the most part, the largest being a bridge for the city of Minneapolis, involving 980 tons, which was taken by the Minneapolis Steel & Machinery Co.

### Very Active Competition

Cleveland, Sept. 8.—There is very active competition among the structural shapes and there is no doubt in some cases contracts are being taken at less than cost in order to keep working forces intact. The price of plain material is, however, very well maintained and seems to be firm at 1.20c, Pittsburgh. James L. Stuart, general contractor for the new building of the East Ohio Gas Co., has awarded the steel contract to the King Bridge Co. Nearly 2,000 tons of steel will be required and Carnegie sections will be used. The Lindner building will require 900 to 1,000 tons. Bars and shapes for the Atlantic Refining Co. addition will be furnished by Master & Mullen.

### At Standstill

Pittsburgh, Sept. 8. — Uncertainty caused by the war in Europe has had an unfavorable influence upon the market for structural material in the Greater Pittsburgh district. Specifications have been falling off slightly and new inquiries involve no tonnages of importance. Shipments are being made against contracts at $1 and $2 a ton under the present market price, 1.20c, Pittsburgh.

### Look Less Favorable

Philadelphia, Sept. 8.—August was a good month for eastern Pennsylvania structural shape mills on tonnage turned out, but September is starting poorly. Not much new business is in sight and the booked tonnage now on hand has been cut into considerably by the liberal specifications received last month. The financial situation is holding back new work. Eastern mills quote 1.30c to 1.35c, Philadelphia, or 1.15c to 1.20c, Pittsburgh, the lower figure being possible only on very early delivery.

### Held Up in the East

New York, Sept. 8.—The financial conditions continue to hold back the structural market and there now are definite instances shown in this district where contracts already let are being deferred indefinitely until the atmosphere is clarified. The most important of these is the terminal station of the Public Service Corporation at Newark. The steel fabrication for this building, about 9,000 tons, was placed some weeks ago with the Hay Foundry & Iron Works and the plain material went to an eastern mill. The progress of this work has been halted now by the insurance company which financed the project. While such delays as this are understood to be only temporary, they reflect the obstacles that now are keeping back new work. Structural awards in this district remain comparatively light and while a fair tonnage is pending, there is uncertainty as to when this will be placed. Eastern Pennsylvania shape makers continue to receive some inquiry from abroad, lots asked for within the week from England, Scotland and Norway, aggregating 3,500 tons of plain material. Little of this business has been converted into orders, however. New York market on shapes remains unchanged at 1.31c to 1.36c.

### CONTRACTS AWARDED.

City of Minneapolis, Minn., Third avenue bridge, 980 tons, to Minneapolis Steel & Machinery Co.

Columbus Athletic Club, Columbus, O., 628 tons, reinforced concrete.

Chicago, Rock Island & Pacific Ry. Co., highway bridge, at Des Moines, Ia., 600 tons, to American Bridge Co.

Minnesota Steel Co., mixer house for coke plant, New Duluth, Minn., 375 tons, to American Bridge Co.

Sacramento County, Cal, bascule bridge over Sacramento river at Walnut Grove, Cal., 315 tons to American Bridge Co.

East Ohio Gas Co. building, Cleveland, 2,000 tons, King Bridge Co.

Apartment house for Klein & Jackson, Eighty-eighth street and Riverside drive, New York City, 600 tons, awarded the Belmont Iron Works.

Y. M. C. A. building, Rochester, N. Y., 700 tons, awarded American Bridge Co.

Power House for American Sugar Refining Co., Boston, 200 tons, awarded Boston Bridge Works.

Building for the Stroock Plush Co., Newburgh, N. Y., 400 tons, awarded Levering & Gerrigues.

Sturgiss apartment house, Eighty-eighth street and Fifth avenue, New York City, 300 tons, awarded the National Bridge Co.

Loft building at 17 East Forty-eighth street, New York City, 200 tons, awarded the National Bridge Co.

Bridge for Bangor & Aroostook railroad at Van Buren, Me., 1,000 tons awarded to the Dominion Bridge Co.

Bridge at Kiskimenitas Junction, Pa., over Allegheny river, 3,500 tons, awarded to the McClintic-Marshall Co.

Miscellaneous bridge work for Pennsylvania railroad, 800 tons, awarded to the McClintic-Marshall Co., and 400 tons to the Fort Pitt Bridge Works.

### CONTRACTS PENDING.

Ayer building, Brooklyn, 800 tons, bids being taken.

Bascule section of the Hanover street public bridge, Baltimore, 700 tons, bids being taken.

Loft building for Brooks Bros., Forty-fourth street and Fifth avenue, New York City, 1,500 to 1,800 tons, bids being taken.

Mail and Express building, Forty-sixth street and Lexington avenue, 5,000 tons, bids taken Sept. 4.

Mill for Champlain Silk Mills, Brooklyn, 500 to 600 tons, bids being taken.

Factory building for Long Island City, 700 tons, bids being taken.

Essex Power Station for Public Service Corporation, Newark, N. J., 1,500 to 2,000 tons, bids being taken.

Lindner building, Cleveland, 900 to 1,000 tons.

Addition to Hotel Rudolph, Atlantic City, now stated steel requirements will run 1,700 tons.

(For complete prices see page 504.)

# Wire Products

## Little New Buying But Specifications Are Heavy

Pittsburgh, Sept. 8.—The market for wire products, like that for sheets and tin plate, is holding up satisfactorily, although there has been no new buying of consequence since the advance of a few weeks ago. Specifications against contracts placed on the basis of $1.50 and $1.55 a keg for nails continue to come out in rather heavy volume, and more important mills are operating at 70 and even 75 per cent of capacity.

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The board of appraisers appointed by the court to estimate the value of about four acres of the Moorehead Rolling Mill Co.'s property in Sharpsburgh, Pa., will submit a report of its findings at a meeting which will open Sept. 17 at the city hall, Pittsburgh. The property is to be condemned by the West Penn railroad, which has acquired most of the property along the Allegheny river at that point. The railroad company plans to build extensive railroad yards.

## English Offers

**For Billets, Sheet Bars and Slabs Are Still Pending**

Philadelphia, Sept. 8.—English consumers who have been inquiring for upwards of 15,000 tons of billets, sheet bars and slabs in this district, have offered about $20.50, Baltimore, or about $19, Pittsburgh, for round lots of 2 x 6-inch billets. For sheet bars, offers of better than $21 at the mill in the Pittsburgh district have been made by the buyers in some cases, and it is understood some business has resulted. No sales of billets for export, however, have been made by sellers in this territory. A new inquiry calls for about 1,000 tons of billets, sheet bars and other forms of semi-finished steel for Australia. Domestic buyers of billets in this territory continue to show only a modest demand. The market is quoted at $22.40 to $23.40, Philadelphia, or $20 to $21, Pittsburgh, for rolling billets.

### Slow Down at Pittsburgh

Pittsburgh, Sept. 8.—Western Pennsylvania and eastern Ohio makers of billets and sheet bars have noticed a slight falling off in new demand the last 10 days, although old contracts are being specified against at a satisfactory rate. No definite inquiries are found in the open market; prices are unchanged. Muck bar, listed at $28, Pittsburgh, is quiet.

Demand for open-hearth and Bessemer wire rods for shipment to foreign countries has not fallen off, although no sales have been made by local offices this week. In fact, there appears to be a tendency on the part of manufacturers in this district to disregard foreign markets until the situation in this country becomes more clearly defined.

### Slow at Ashland

Ashland, Ky., Sept. 8.—Wire rods and billets are slow, but orders are slightly in excess of the same period last month. The recent advance of 50 cents a ton is holding and quotations are now $20.50 for billets and $25.50 for wire rods, both Ashland basis.

## Brisk Business from Store

Chicago, Sept. 8.—Slack business in structurals from mills has resulted in such prompt delivery that warehouses are doing considerably less in this department than previously this year. Mills now are able to give almost as quick delivery as warehouses and the difference in price is decided. Other lines of warehouse products are in good demand and business continues brisk with a steady volume well scattered over the various departments.

### Warehouse Business Slow

Cincinnati, Sept. 8.—Warehouse business is slow, although dealers had expected better orders the first of the present week. Extensive building operations in Cincinnati have caused a fair demand for twisted concrete reinforcing bars and several large orders for these have also been received for use in bridges being built in this vicinity. Prices show no tendency to change despite recent advances by the mills on finished products.

## Railroad Buying

**Is Very Light Owing to Tightness of the Money Market**

New York, Sept. 8.—Extremely light buying of iron and steel supplies by the railroads still characterizes the situation. In the main, this is attributed to the inability of the various systems to finance their purchases, for the situation in this respect, already unfavorable before the war, has been rendered more so by the dearness of money that now prevails.

The car market is practically dead. Builders say there is a dearth of inquiry. Some of the inquiries that have been current, including the Southern Pacific, Wabash and others, have become inactive.

In rails, 10,000 tons of conductor rails for the Municipal Railways Corporation, New York City, have been divided among eastern mills. The Pennsylvania Steel Co. has taken an order for 1,000 tons for a southern road. Some inquiry for rails for export remains current, but sales are coming rather slowly.

### Order Held Up

Cleveland, Sept. 8.—The announcement that the filling of the contract for 35 locomotives for the C., H. & D. railroad recently placed with the Lima Locomotive Works, has been held up for financial reasons has been received with disappointment by companies which expected to furnish plain material to the Lima concern. The C., H. & D. railroad is in the hands of a receiver and there seems to be no immediate prospect of raising the money to pay for the locomotives. All railroads are economizing and few orders of any kind are being placed in this district.

The Harrisburg Railways Co., Harrisburg, Pa., has ordered an acetylene welding outfit from the Pittsburgh office of the Oxweld Acetylene Co., Chicago.

(*For complete prices see page* 504.)

## Coke is Weak

**But Dealers Are Hopeful — Curtailed Operations Probable**

Pittsburgh, Sept. 8.—About the only encouraging thing that can be said with reference to the market for standard grades of Connellsville coke is that operators entertain hopes of enjoying more activity, and higher prices, before the end of the year. Just at present, however, there is no indication of any stiffening in quotations, which have appeared weak and irregular for several weeks. Blast furnace fuel, for immediate shipment, is weak at $1.75, ovens, reports of sales at 5, 10 and 15 cents a ton under that figure being heard. Sales have scarcely involved enough tonnage, however, to affect the general market. Foundry coke is hovering around $2.25, ovens, for immediate shipment. The blowing out of several blast furnaces in this district probably will be followed by curtailed operations in the coke fields. *The Connellsville Courier*, for the week ending Aug. 29, says production was 259,683 tons, an increase of 18 tons over the week before. Production since the beginning of the second half has been at the rate of about one million tons a month.

### Coke Drifting

Cincinnati, Sept. 8.—The coke market is very slow and is dragging along without any change. Sales are mostly of foundry coke in small lots for immediate delivery, as buyers are taking advantage of concessions granted for spot shipment fuel. Demand for furnace coke is at a minimum, as only one furnace is in blast in the Ironton and Hanging Rock districts at the present time and although three more are contemplating blowing in at Ashland, Ky., they are well supplied with fuel.

### Dull at St. Louis

St. Louis, Sept. 7.—There is virtually no activity in coke at St. Louis. Prices remain at $2.50 for Connellsville, and Virginia foundry grades for prompt delivery.

## Pipe Market Still Drags

Pittsburgh, Sept. 8.—The market for tubular goods at this center has been quiet for three weeks, and there is no indication of any immediate change in the situation. No inquiries of importance are before the trade, and it is believed that no great activity will be experienced until the return of more normal conditions. Prices are reported as firmly maintained. Boiler tubes are quiet and continue irregular in price.

# Adapting Itself to the Great War

## England Pleased With Attitude of American Consuls—Higher Prices of Finished Materials---Some Interesting Features

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation street,
Birmingham, Eng., Aug. 28.

THE commercial community is rapidly adapting itself to the war conditions. Great satisfaction is expressed at the evidences of financial strength manifested in various ways. The fact that the Bank of England has during the week added upwards of £5,000,000 to its stock of gold and increased its reserve by over £7,000,000 is welcomed as a piece of very good news. The total reserve, which fell a few weeks ago below £10,000,000 has been raised to £26,000,000, which is only £6,000,000 smaller than during the world-wide peace of a year ago. The issue of treasury bills amounting to £15,000,000, eliciting offers of £40,000,000, tells the same story of financial soundness. There is, however, among traders some shortness of money, which has stimulated a demand for prompt payment of bills, especially to assist the small manufacturer. There is an increasing confidence now as to the ultimately satisfactory result of the war; but it is admitted that our men are heavily outnumbered, and so far we have failed to turn the tide of battle. Recruiting is going on here at a tremendous pace, and manufacturers who find their business badly hit by the war are discharging their unmarried employes unconditionally, if they are not disposed to join the army—but with an understanding that, if they join the colors, any dependants will be looked after during the war, and their positions will be kept open for them on their return to civil life. The enrollments of recruits are somewhat over 100,000, towards the 500,000 asked for by Lord Kitchener. The Reservists, Territorialists and Recruits, include many thousands from the iron, steel and allied trades.

One of the results of the war has been a great shortage of pit props, which come mainly from the north of Europe, and the shipment of which is prevented by the war. This will add considerably to the cost of coal mining.

There is increasing keenness to capture German trade, and nowhere is the campaign being carried on with greater vigor than in Birmingham.

Nothing has given greater satisfaction since the outbreak of war than the fine part played by the American consuls, and the British people will not forget the action of the American consul of Brussels in going out with the burgomaster to meet the German army, to intimate to the victors that he was there to see that international laws were observed. Today we learn from the White Paper recording the conversations between Sir Edward Goshen, the late British ambassador at Berlin, and the heads of the German government, that, immediately the rupture took place, the American consul promptly offered his assistance to Sir Edward in the event of any difficulty being found in obtaining a safe transport to London. This courageous and courteous emergency service by the American consuls will strengthen the kinship and friendship between the Anglo-Saxon nations.

### Pig Iron Irregularities

The pig iron industry has benefited decidedly from the war, but shows some rather strange irregularities. Since a week ago, Cleveland pig iron has fallen about 2s (48c) per ton and yesterday's quotation for Cleveland warrants was 50s 11d ($12.22) with 51s 1d ($12.26) for monthly transactions. The fall is partly due to profit-taking by speculators and still more to higher freights and shipping uncertainties. The fall in prices has also been accompanied by an increase in stocks which now stand at 93,000 tons. Nobody believes this will continue, and it has not prevented decided advances in other brands. Practically, every other description of pig iron has advanced 10s ($2.40) to 12s ($2.88) and this was true yesterday on the Birmingham exchange in regard to Northampton, Derbyshire and Nottingham brands, all of which had advanced about 1s 6d (30c). Northampton iron was quoted at 62s ($14.88), Derbyshire 63s ($15.12), and South Staffordshire part mine 60s ($14.40). A peculiar feature is that in the Midlands the run is almost entirely on forge iron, which before the war went begging in all directions, while foundry iron was in good demand. The drop in engineering and hardware work has decidedly affected the demand for foundry material. Generally, the pig iron business is so much better that two firms are getting ready to relight their furnaces next month.

Every department of the finished iron and steel trade was buoyant at the meeting held yesterday at Birmingham, and higher prices were the rule, even where nominal standards were unchanged. In some departments the advances were substantial. The most decided advance was in steel wire, the standard being raised from £9 15s ($46.80) to £10 15s ($51.60). The makers of wire are in enormous difficulties, and some Birmingham firms are not producing more than one-third of their capacity. This is solely because of the inability to obtain wire rods at profitable prices. A typical example is the case of a Birmingham wire roller who bought wire rods before the war from Germany for £5 per ton. This supply has, of course, ceased. If freights do not make American supplies impossible, it is hoped that these will prove the solution of the problem.

The case is rather different with steel billets, which are produced by many more mills and can be bought at a rise of about £1 ($4.80) per ton increase which the maker can get back again from his customer. This has greatly added to the activity of the steel mills.

The makers of finished steel are in a better position than they were. There is a meeting being held today of joint makers, who will probably advance prices, and their customers have been warned that provisional offers would not be kept open after noon, mid-day. There is an increasing disposition to carry out building contracts, partly to find employment, and also because of the general belief that prices are likely enough to be higher after the war than they are at the present time. The rail trade continues decidedly slack, the home railways giving out practically no business at all at the present time.

For all descriptions of iron except galvanized sheets, prices were higher. Sheets have eased somewhat, because of some spelter supplies shipped here from America. Sheets could be bought yesterday at £13 10s ($64.80) to £14 ($67.20), but these prices were quite £2 10s ($12) above those prevailing before the war. As in some other branches, sellers are contracting very cautiously, and some are quoting prohibitive prices.

Common bars were about half a crown (60c) dearer on the week, easily realizing £7 17s 6d. Many

users of nut and bolt work, who have been using cheap Belgian steel are now going back to common iron. The rise in marked bars has not checked business, the wagon building companies having booked some very good orders. Gas strip is also very much in demand, owing to so many tube orders, formerly captured by Germany, reverting to this country.

Against the war activities and the huge demand for government requirements, particularly in armaments, must be set a good deal of cancelling of big structural jobs, and of most descriptions used by the general public.

The tin plate trade is decidedly better, although there is not yet employment for all the mills. Prices are rather higher on a basis of 13s 3d ($3.18) for standard Bessemer descriptions.

A great deal of galvanized iron has been bought by the government for military compounds and hospital roofs, with chain and cable iron, hoops for ammunition cases, wheel and horseshoe iron and barbed wire fencing for military entanglements. The latter has increased in price 50 per cent.

## Steel Importer Fails

Receivers have been appointed for the firm of Hermann Boker & Co., 101-103 Duane street, New York City, importers of cutlery, metals and hardware, as the result of the inability of the latter to negotiate additional credit because of the effect of the war upon financial conditions. The liabilities are given as $2,071,592 and the assets as $2,658,345. The firm was established about 75 years ago and represented as agent, several French and English cutlery manufacturers. It also imported metals. It has branches in Cleveland, Chicago and Montreal and a factory in Newark, N. J.

## Canada is More Hopeful

Buffalo, Sept. 8.—Reports from the Canadian side of the district show the development of a more hopeful situation. Canadian manufactures report a large demand from England for wire nails, formerly obtained in Germany. In view of the fact that Canada will not be able to meet very much of this demand, it is more than likely to come to the United States to be satisfied. Canadian buyers have already been the rounds of mills and agencies on this side of the border, making inquiries as to what can be done here to supply the English demand.

## Ordnance

### Not Being Shipped to Warring Nations —Orders From Other Countries

No orders for ordnance have been taken by the Bethlehem Steel Co. from any of the belligerent European nations nor have any shipments been made to any of the warring countries since the outbreak of the present conflict, according to a published statement by one of the officials of the company. Continuing, this official is quoted as saying:

"I would state, however, that the Bethlehem company is in the business of making ordnance, and its management hopes before long to receive some orders. I might add that there is no truth in the rumor that at the outset of the European war the Bethlehem company sent a large number of projectiles to Great Britain. We had none on hand of the calibre of the British guns, and we would not make any without a definite contract. The rumor that Bethlehem is making ordnance for the warring countries is easily explained. We are filling a large order for the Grecian navy. We are making battleships with guns complete for the Argentine Republic, and we are furnishing several million dollars' worth of guns and ammunition for Chili."

## Death of Wm. H. Pratt

William H. Pratt, president of the Illinois Steel Warehouse Co., subsidiary of the United States Steel Corporation, died at his home in Kenilworth, Ill., a suburb of Chicago, Sept. 5. The end was not wholly unexpected, as Mr. Pratt had been in delicate health for some time. He was one of the originators of the iron and steel warehouse business in this country and was prominently identified with the Illinois Steel Co. for many years. He worked up through the ranks to the position he held at his death and was one of the best posted men in the trade in the country. It was largely through his influence that the Steel Corporation adopted the policy of selling direct to the consumer in small quantities through warehouses. Under Mr. Pratt's administration, the warehouse business of the Illinois Steel Co. grew rapidly and within the past three years branch plants have been established in St. Louis and St. Paul. The main warehouse is at the old North works of the Illinois Steel Co. in Chicago.

Frank A. Schwertner, treasurer and purchasing agent of the Berger Mfg. Co., Canton, O., died recently at his home in that city.

Almond F. Cooper, who invented a car wheel which was used for many years by the Pullman Co. and was the designer of other mechanical devices, died at the home of his daughter at Flushing, L. I., Sept. 1, aged 97 years.

Sir Stephen Wilson Furness, who was known widely in English shipping and industrial circles, died at London, Sept. 6, aged 42 years. He was chairman of Furness, Withy & Co., Ltd., ship owners: Irvine's Shipbuilding & Dry Docks Co., Ltd.; South Durham Steel & Iron Co., Ltd.; Neptune Steam Navigation Co., Ltd.; Geo. Warren & Co., Ltd.; British Maritime Trust, Ltd.; and of a large number of other shipping and shipbuilding firms. He had been a member of Parliament for Hartlepool since 1910, and was created a Baronet in 1913.

## Tin Plate

### Mills Operating at Full Capacity of Leading Makers

Pittsburgh, Sept. 8.—Demand for tin plate continues heavy, and leading manufacturers are operating mills at almost 100 per cent capacity. There have been some attempts on the part of heaviest consumers to open negotiations for 1915 requirements, but it is apparent makers are not willing to consider the future during present uncertain conditions. It is not probable, say some mill managers, that prices for 1915 delivery will be offered until the latter part of the year.

## Improving Blast Furnaces

The Thomas Iron Co. has awarded a contract to Arthur G. McKee of Cleveland for equipping one of its Hokendauqua furnaces with a new steel hearth jacket, new bustle pipe and tuyere stocks and a new top platform. The furnaces also will be relined. The steel work will be fabricated and erected on a sub-contract by Messrs. Tippett & Wood, of Phillipsburg, N. J. The No. 1 Hokendauqua furnace, which was blown out on Aug. 31, also is undergoing some repairs which will include a new bosh jacket, bosh lining and patching of the brick work at the top. The work on the two furnaces is to be pushed to early completion.

The Yale & Towne Mfg. Co., Stamford, Conn., has announced a further curtailment in its operations. Its schedule now calls for 32 hours, or only four days of eight hours each week.

Officers of the Carnegie Steel Co., Pittsburgh, visited plants of the company at Youngstown, Sept. 3.

# Pig Iron Production Shows Gain

## Small Increase Made in August by Steel Works Furnaces Offsets Decline in Merchant Iron Output—Total Active Stacks Unchanged

PIG IRON production in August showed an increase of 41,159 tons over July, due entirely to the gain made by the steel works or non-merchant furnaces, as there was a loss in the output of merchant iron. The total production in August was 1,996,483 tons, compared with 1,955,324 tons in July. The average daily production was 64,403 tons in August, against 63,075 tons in July, a gain of 1,328 tons.

The steel works furnaces produced 1,480,362 tons in August and 1,400,462 tons in July, a gain last month of 79,900 tons. The output of merchant iron in August was 504,544 tons, against 538,341 tons in July, a loss last month of 33,797 tons. The steel works furnaces averaged 47,754 tons daily during August, compared with 45,176 tons in July, a gain of 2,578 tons. The average daily production of merchant iron was 16,276 tons in August and 17,366 in July, a loss last month of 1,090 tons.

The number of stacks in blast on the last day of August was 187, the same number being active on the corresponding day of July. Seven merchant furnaces were relighted during August and eight were blown out, a net loss of one. Four steel works furnaces blew in and three went out of blast, a net gain of one. In all, 11 furnaces were put in blast and 11 blown out.

The production of ferro in August was 6,443, compared with 8,389 tons in July, a loss of 1,946 tons. Spiegel production in August was 5,134 tons, against 8,132 tons in July, a loss of 2,998 tons.

Merchant furnaces blowing in were: Bessemer No. 2, Tennessee Coal, Iron & Railroad Co., Aug. 24; one Woodward, Woodward Iron Co.; Norton, Norton Iron Works, Aug. 24; Susquehanna No. 4, Rogers, Brown Iron Co., Aug. 26; one Cleveland, Cleveland Furnace Co.; Punxy, Punxsutawney Iron Co., Aug. 25, and Shenango No. 1, Shenango Furnace Co., Aug. 17.

Those blowing out were: Bessemer No. 1, Aug. 9, and Bessemer No. 4, Aug. 13, Tennessee Coal, Iron & Railroad Co.; Vanderbilt No. 2, Woodward Iron Co., Aug. 29, for relining; Northern, Northern Iron Co., Aug. 3, repairs and relining; Blanche, Marting Iron & Steel Co.; one Josephine, Corrigan, McKinney & Co., Aug. 10; Emporium, Emporium Iron Co., Aug. 3, and Shenango No. 3, Shenango Furnace Co., Aug. 26.

Steel works furnaces blown in were: One South Chicago, Wisconsin Steel Co., Aug. 26; one Mingo and two Duquesne, Carnegie Steel Co. Those blown out were: Maryland No. 2, Maryland Steel Co., Aug. 24, for repairs; Lorain No. 4, National Tube Co., Aug. 26, and one Cambria, Cambria Steel Co.

Clifton No. 2 furnace of the Alabama Co. was relighted Sept. 1. The Virginia Iron, Coal & Coke Co. blew out its Radford Crane stack on Sept. 3.

Boilers at the furnace plant of the Dunbar Furnace Co., Dunbar, Pa., controlled by the American Manganese Mfg. Co., Philadelphia, are being repaired by the Connellsville Iron Works, Connellsville, Pa. One of the stacks will be blown in the latter part of this month on basic iron, but will run on ferro-manganese after operating a fortnight. The company will use domestic ores.

Hannah furnace of the Republic Iron & Steel Co., Youngstown, is scheduled to go out of blast this week, according to a dispatch from that city.

Clinton furnace of the Clinton Iron & Steel Co., Pittsburgh, went out of blast last week. The stack was running on foundry iron.

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The National works of the National Tube Co., Pittsburgh, has awarded a contract for 24 Taylor stokers, to operate Babcock & Wilcox boilers, to H. N. Schofield, Pittsburgh representative of the American Engineering Co., Philadelphia.

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The George T. Ladd Co., Farmers Bank building, Pittsburgh, has been awarded a contract for the installation of a new rope drive in the tin plate mills of Follansbee Bros., Follansbee, W. Va.

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The Ayer & Lord Tie company, Chicago, has just entered an order for 4,000 square yards of creosoted block flooring for the Canton Sheet Steel Co., Canton, O., an unusually large order for one installation.

### AVERAGE DAILY PRODUCTION.

| | 1914. | 1913. | 1912. |
|---|---|---|---|
| January | 60,624 | 89,929 | 66,220 |
| February | 67,450 | 92,095 | 72,372 |
| March | 75,534 | 89,123 | 77,791 |
| April | 75,383 | 91,812 | 79,254 |
| May | 67,646 | 90,865 | 80,753 |
| June | 63,486 | 87,229 | 81,125 |
| July | 63,075 | 82,525 | 77,502 |
| August | 64,403 | 81,839 | 80,650 |
| September | ..... | 83,137 | 81,482 |
| October | ..... | 81,933 | 86,569 |
| November | ..... | 74,322 | 87,985 |
| December | ..... | 63,746 | 89,590 |

### MONTHLY PRODUCTION.

| | 1914. | 1913. | 1912. |
|---|---|---|---|
| January | 1,879,336 | 2,787,800 | 2,052,806 |
| February | 1,888,607 | 2,578,670 | 2,098,796 |
| March | 2,341,551 | 2,762,823 | 2,411,529 |
| April | 2,261,501 | 2,754,353 | 2,377,621 |
| May | 2,097,019 | 2,816,825 | 2,503,341 |
| June | 1,904,566 | 2,616,883 | 2,433,737 |
| Total 1st half | 12,372,580 | 16,317,354 | 13,877,830 |
| July | 1,955,324 | 2,558,275 | 2,402,567 |
| August | 1,996,483 | 2,537,018 | 2,500,163 |
| September | ..... | 2,494,098 | 2,444,454 |
| October | ..... | 2,539,924 | 2,683,645 |
| November | ..... | 2,229,960 | 2,639,562 |
| December | ..... | 1,976,138 | 2,777,292 |
| Total 2d half | ..... | 14,335,413 | 15,447,683 |
| Grand total | 16,324,387 | 30,652,767 | 29,325,513 |

### AUGUST PIG IRON.

| States. | No. of stacks. | No. in blast last day of month. Aug. | July. | Total tonnage made. Merchant. | Non-Merchant. | ——Totals—— Aug. | July. |
|---|---|---|---|---|---|---|---|
| Pennsylvania | 157 | 73 | 73 | 120,259 | 689,772 | 810,031 | 787,724 |
| Ohio | 73 | 38 | 38 | 89,551 | 367,589 | 457,140 | 444,333 |
| Alabama | 45 | 19 | 20 | 101,316 | 64,397 | 165,713 | 151,595 |
| Virginia | 22 | 6 | 6 | 23,017 | ..... | 23,017 | 24,050 |
| New York | 26 | 13 | 13 | 66,843 | 51,944 | 118,787 | 119,149 |
| New Jersey | 7 | 2 | 2 | 10,698 | ..... | 10,698 | 10,825 |
| Illinois | 26 | 13 | 12 | 32,799 | 139,935 | 172,734 | 175,818 |
| Colorado | 6 | 2 | 2 | | | | |
| Indiana | 10 | 8 | 8 | | | | |
| Maryland | 4 | 1 | 2 | | | | |
| Wisconsin | 6 | 3 | 3 | 22,711 | 160,368 | 183,079 | 184,603 |
| Kentucky | 7 | 2 | 1 | | | | |
| West Virginia | 4 | 1 | 1 | | | | |
| Tennessee | 18 | 4 | 4 | | | | |
| Washington | 1 | 0 | 0 | 21,493 | 6,357 | 27,850 | 25,044 |
| Georgia | 2 | 0 | 0 | | | | |
| Texas | 3 | 0 | 0 | | | | |
| Minnesota | 1 | 1 | 1 | | | | |
| Michigan | 3 | 1 | 1 | | | | |
| Missouri | 1 | 0 | 0 | 15,857 | ..... | 15,857 | 15,662 |
| Spiegel—All states | | | | | | 5,134 | 8,132 |
| Ferro—All states | | | | | | 6,443 | 8,389 |
| Total | 422 | 187 | 187 | 504,544 | 1,480,362 | 1,996,483 | 1,955,324 |

# MEN OF THE IRON TRADE

**Who they are  Where they are  What they are doing**

I. J. Streng, of the M. Streng Sons Co., Pittsburgh, is spending a vacation at Atlantic City.

J. R. Jones of the Alan Wood Iron & Steel Co., Philadelphia, has gone to Maine for a short stay.

W. P. Cheney, in charge of the coke department of Rogers, Brown & Co., at Pittsburgh, is enjoying a vacation in the White mountains.

Lawrence Riddle, superintendent of the blast furnaces at Pittsburgh of the Carnegie Steel Co., left Sept. 5 for a two weeks' vacation in Atlantic City.

W. Harry Brown, Pittsburgh coal and coke operator, arrived at New York Sept. 4, on the Mauretania. He was at Lucerne, Switzerland, at the outbreak of the European war.

T. S. Crane, of Pilling & Crane, Philadelphia, recently returned from London after having had a summer's European tour interrupted by the war. He now is at Lake Placid, N. Y.

F. W. Horne, who represents Niles-Bement-Pond, Inc., New York, and a number of other American manufacturers of various products at Yokohama, Japan, is spending a short time in New York.

W. L. Clark, vice president of Niles-Bement-Pond, Inc., New York, returned on Aug. 29 from Europe. C. L. Cornell, treasurer of the company who also was in Europe at the time the war broke out, returned the week before.

Prof. George Kemmerer, for six years professor of chemistry in the School of Mines of New Mexico, has been appointed instructor in chemistry at Carroll College, Waukesha, Wis., to succeed Dr. Breckenridge, who resigned to take the chair of chemistry in Wabash University, Indiana.

H. J. Maloy recently has been appointed assistant purchasing agent of the Aluminum Co. of America, Pittsburgh. Mr. Maloy, who has been associated with that company for several years, succeeds David Williams, who resigned to accept a position with the Library Bureau of New York City.

W. H. Jackson, secretary and treasurer of the Des Moines Bridge & Iron Works, Pittsburgh, is on an extended automobile trip with his family through the eastern states. His itinerary took him over a northerly route to Buffalo and east to Boston, then on to New York and Philadelphia, with a scheduled rest at Atlantic City.

G. H. Charls, a newly elected member of the American Iron and Steel Institute, received his education at the University of Cincinnati, leaving the university in his junior year to accept a position with the Central Union Telephone Co. in Indianapolis. A year later he became affiliated with the American Rolling Mill Co., Middletown, O., and has been connected with this company for the last 13 years. Mr. Charls has gained all his

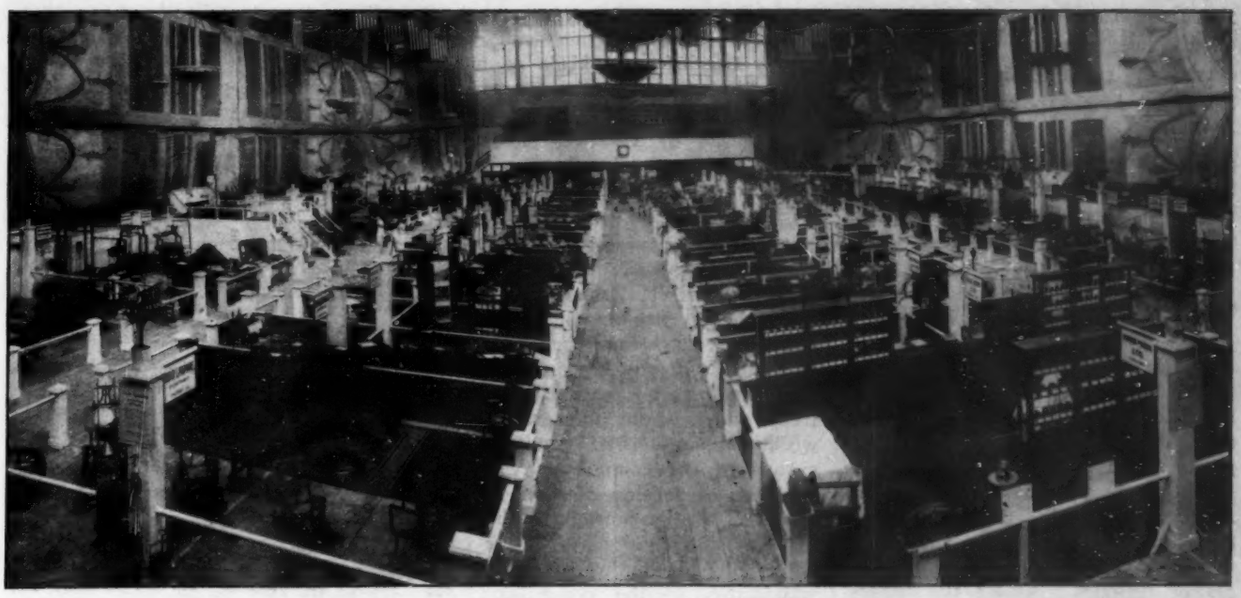
G. H. CHARLS,
New Member American Iron and Steel Institute

experience in the iron and steel business while in the employ of this concern, having started in the operating department and held various positions in the accounting and sales departments. He is now secretary and general sales manager of the company. In 1909, he organized the Dixie Culvert & Metal Co., with main offices at Atlanta, Ga., of which company he is president. He was also one of the organizers of the Tennessee Metal Culvert Co., Nashville, and the Colorado Ingot Iron Pipe Co., Denver. Mr. Charls is best known in connection with the introduction and sale of American ingot iron, produced by the open-hearth process.

P. I. Chandeysson, president of the Pan-Electric Mfg. Co., St. Louis, a naturalized American, has been forced to serve in the French army, according to a postcard received by his secretary, William C. Forder, from Pont St. Esprit, France. On the card was written, "Here, at the present writing, God only knows when, if ever, I'll get back. Men depart every day for parts unknown. War is hell." Mr. Forder has submitted the facts to the state department at Washington.

Louis Kuehn, president and general manager of the Milwaukee Corrugating Co., Milwaukee, Wis., is on his way to America and has not been held by the German government for military duty, as early reports from Europe indicated. Mr. Kuehn, wife and family, left Germany shortly after war was declared. Rumors reached America that because Mr. Kuehn, who is a native of Germany, has not taken out his second naturalization papers here, had been pressed into service. On Sept. 3, cables were received from London that Mr. Kuehn arrived there and would take the first steamship to America.

C. N. Markle, now residing at Galveston, Texas, is a newly elected member of the American Iron and Steel Institute. Mr. Markle was born at Oxford, O., and his first business experience was with the Wyeth Hardware & Mfg. Co., at St. Joseph, Mo. He was engaged for seven years with the Wyeth company, and then entered the employ of the Simmons Hardware Co., at St. Louis. After about eight years of successful experience on the road, for this company, Mr. Merkle was called into the home office and made manager of one of the most important departments. He served in this position for about seven years and then established the Markle Lead Works, of St. Louis, with a manufacturing plant at Granite City, Ill. This company built up a large business in shot, lead products and the smelting of Missouri ore. The Markle Lead Works was purchased by the United Lead Co. about seven years later and Mr. Markle went with that company, remaining with it two years. After leaving the lead business, Mr. Markle spent several years with financial concerns in New York City. In 1912, he went into business at Galveston, Texas, establishing the Texas Carnegie Steel Association, of which he is president and general manager.



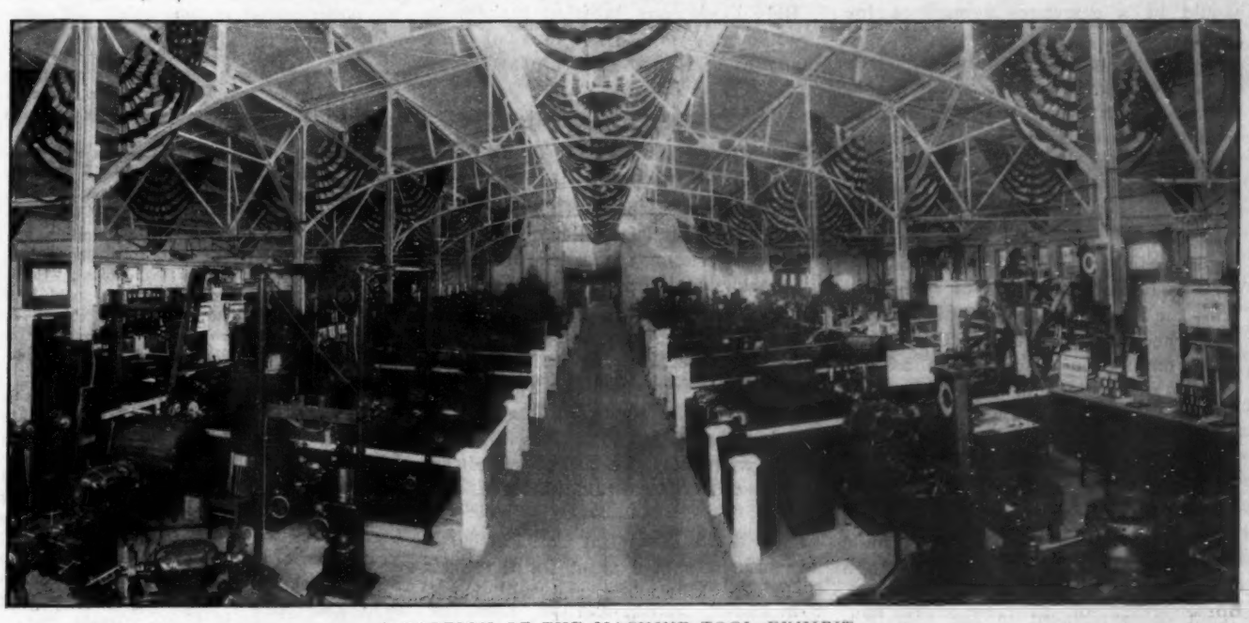
Main Arena at Foundry and Machine Exhibition Looking East

# Great Foundry and Shop Exhibit

## A Review of Display of Foundry, Machine and Pattern Shop Equipment at International Amphitheatre, Chicago

WITH over 155 exhibitors, the eighth annual display of foundry and shop equipment is being held in Chicago this week simultaneously with the annual convention of the allied foundry associations. The great arena of the International Amphitheatre, one of the largest exhibition buildings in the world, is crowded with the most up-to-date products of America's metal working establishments. A survey of the show as a whole gives a picture of the advances of the past 12 months in the foundry and machine shop field. Although the exhibits contain little that is radically new or that gives promise of being revolutionary, the past year has been by no means devoid of progress, in spite of unusually unsatisfactory business conditions. There is a steady, persistent pressure to eliminate all hand-labor operations as fast as possible in all branches of manufacture, and considerable ground has been gained along this line recently. In the molding machine field, manual dexterity has been all but totally supplanted by mechanical accuracy; in handling materials, preparing and mixing sand or cleaning castings, machines are becoming more numerous every month, while in the machine shop all operations are rapidly approaching the automatic stage.

The principal advances in molding machine construction during the past



A PORTION OF THE MACHINE TOOL EXHIBIT

year have come through combinations of machines which perform elementary operations, resulting in devices that handle all of the operations connected with making a mold instead of only a portion of them. This tendency, which first became noticeable at the exhibition in 1913, has been more pronounced during the past year than ever before. Machines are now being built which employ two or more kinds of motive power including both compressed air and electricity. It is becoming evident that instead of electricity supplanting compressed air in foundry work, particularly in connection with molding machines, these two sources of power will supplement each other and will be equally important in the foundry of the future.

A standard type automatic molding machine was one of the chief features of the display of the Berkshire Mfg. Co., Cleveland. This machine not only performs molding operations, but rid-

(*Continued on page* 495.)

## All Employes

### Would Have Right to Vote for Miners' Grievance Committee

Washington, Sept. 8.——Plans for the settlement of the Colorado mining strike are suggested in a letter President Wilson has just sent to the president of the Colorado Fuel & Iron Co., the chairman of the Victor-American Fuel Co., the president of the Rocky Mountain Fuel Co. and the officers of the United Mine Workers of America. All of the suggestions adopted are the result of an investigation of the strike situation by the commissioners of conciliation.

The plan urges a three-years' truce to all parties, the state mining and labor laws to be enforced during that period, and strikers, who have not been found guilty of violation of the law, would be restored to their work. In the case where the place of an employe has been filled he would be given employment at the same or other mines. Intimidation of union or non-union men would be strictly prohibited and the current scale of wages, rules and regulations for each mine would be posted.

Selected by majority ballot at a meeting called for that purpose, all employes, except officials of the company, having the right to participate, would be a grievance committee for each mine. Grievances would be first taken up individually with the proper officer of the company, and, failing adjustment, the committee would refer to their local grievance committee for further consideration with the mine officials. Still failing adjustment, the matter would be submitted to a commission of three men, to be appointed by the President, the men to be representative of each side, with the third acting as umpire, whenever necessary. During the truce, this commission would serve as adjusters or referees in all disputes affecting wages, working and social conditions. While the truce existed, the claim for contractural relations would be waived, but this would not prevent voluntary agreement between employer and employes; no mine guards would be employed, although this would not preclude the employment of watchmen; in the establishment of the truce, federal or state troops should be unnecessary; there would be no picketing, parading, colonizing or mass campaigning by representatives of any labor organization of miners that are parties to the truce, which would interfere with the working operations of any mines; decisions of the commission would be final; no suspension of work pending decision; the suspension of the mine over six consecutive days by the company may be authorized for cause satisfactory to the commission; the commission would impose penalties for wilfull violations of conditions.

## Not Willing

### To Pay Prices Asked by American Manufacturers

New York, Sept. 9. (By wire.)—A total of 40,000 to 50,000 tons of semi-finished material, largely billets and sheet bars for Great Britain, has been bid upon in this district. Orders taken so far have been few as English buyers are not yet willing to pay prices asked by American mills, which are from $24.50 to $25, New York, for sheet bars and about a dollar less for billets. Offers equivalent to about $23, New York, for sheet bars have been made by English buyers to mills here. Some recent English inquiries have been satisfied at home.

Bids have gone in from makers in this country on 28,000 tons of rails for the Victorian government.

## Senate Agrees

### To Conference Report on Trade Commission Bill

Washington Sept. 9. (By wire.)—After 20 roll calls the Senate late yesterday afternoon succeeded in getting a quorum and agreed to the conference report on the federal trade commission bill by a vote of 43 to 5. The measure since Saturday had been used for filibustering purposes by senators opposed to the river and harbor bill. Not until the proposal was made to issue writs for the arrest of absent senators was a quorum obtained.

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The Ward Equipment Co., Pittsburgh, has been appointed agent for the Chain Belt Co., Milwaukee, and will handle elevators, conveyors, etc.

# METAL MARKETS

## New York

Sept. 8.

**Copper.**—The small amount of new business that obtains in the copper market still leaves prices unfixed absolutely and they are the source of some speculation in the trade. Some of the largest sellers still take the position that there is practically no market for this metal and that the situation is wholly normal. Electrolytic in small lots is selling at 12.50c, delivered 30 days, and it is reported that 12.37½c delivered 30 days might be done. Domestic consumers are buying only for immediate requirements. On a cash basis, electrolytic is held at from 12.12½c to 12.25c, f. o. b., New York. Prime lake copper also is quiet. Certain brands can be had at 12.50c, New York, but the usual price is 12.62½c, New York. Total exports of copper in September to date were 4,185 tons.

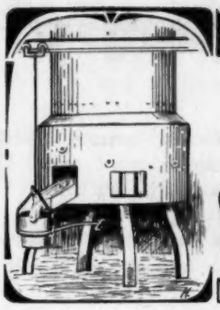
**Tin.**—The market has continued to grow duller and weaker daily and today spot tin is quoted at 34 cents, New York. For September delivery, 33 cents is being done for October, 32 cents and for November, 31 cents. The larger tonnage now moving to the United States from foreign quarters is impelling the easier market and consumers no longer are seriously concerned regarding their earlier requirements. Arrivals today alone totalled 822 tons, the Minnetonka bringing in 400 tons and the Mineric, 350 tons. There were other scattered arrivals. This brings the total tonnage received this month to 1,772 tons, with 2,025 tons reported afloat.

**Lead.**—There continued very little demand for lead and the price is unchanged as quoted for some time, 3.90c, New York. A lot of 100 gross tons of lead has been exported to Glasgow.

**Spelter.**—Foreign demand having dropped off in quantity and with small buying at home, the spelter market is more staple and prime western is quotable at 5.75c to 5.87½c, New York, or 5.60c to 5.75c, St. Louis. The recently excited buying for foreign account, no longer is to be seen although there continues a quiet inquiry principally for delivery to England.

**Antimony.**—There are more sellers than buyers of antimony at the present time. Some of the consumers who bought recently, now apparently are willing to sell some of their material to realize from the premium prices prevailing. However, there is so little demand that the situation largely is nominal. Cookson's is quoted at 14c to 15c, duty paid New York; Hallett's, 13c to 14c; United States, 12c to 13c and Hungarian 11c to 12c, but any of these ranges could be shaded were any desirable order to appear.

**Aluminum.** — The arrival of 75 tons this week, shows that foreign aluminum has not been shut off completely. Such shipments, however, are so irregular as to allow little dependence to be placed on foreign sources and the sellers of these brands are quoting very cautiously, if at all. The aluminum market is not very active. For spot No. 1 ingots, 20 cents, New York, represents either domestic or foreign. Some contracts for next year's delivery, continue to be made by the leading domestic producer at 19.50c, Niagara Falls.



# PAPERS READ AT THE FOUNDRY CONVENTION

## Scientific Management in the Foundry

BY FREDERIC A PARKHURST

*On this and the following pages will be found several of the most important papers read at the annual convention of the allied foundry associations in Chicago this week. Owing to lack of space some of the papers are printed in abstract, but several of those abstracted will appear in full in later issues of* THE IRON TRADE REVIEW. *Also other papers not mentioned in this issue owing to lack of space will be published later. The foundry convention this year is noteworthy for the number and variety of papers, and all of those presented will merit careful study by anyone interested in advanced foundry practice.*

AS a general proposition, the foundry offers neither more nor less in the way of difficulties to be overcome when installing scientific management than other lines of business. There is no hard and fast rule to be followed. Each case, each kind of business and each different plant presents its own peculiar problems. On the other hand, the possibilities of the scientific methods are greater in the foundry than perhaps any other metal industry.

Following the foregoing brief introduction, this paper describes a system of scientific management installed in the foundries of the Aluminum Castings Co., Cleveland and Detroit, in great detail. Briefly it covers the organization of the office and shop personnel, the sales department and the shop itself. Considerable space is given to a discussion of the functions of the planning room, the use of symbols, the control of methods and labor through time studies and standardized operation times and methods of making time studies and determining standard elemental sub-operation times. In the shop of the Aluminum Castings Co., a careful analysis of the elementary operations involved in making molds and castings was made, resulting in the tabulation of data covering over 42,000 operations or combinations of operations. By means of this exceptionally elaborate time study, 95 per cent of all the bench and squeezer work handled by any of the six foundries of the Aluminum Castings Co., can be put on bonus direct from the tables. Short run work can be put on bonus at once without the necessity for making time studies on each pattern. By this method it is possible to apply scientific management methods to a short job which ordinarily would run out long before a satisfactory time study could be made. In addition, these time studies give definite data on which to base estimates in figuring the selling price of castings. In conclusion the paper describes the Parkhurst differential bonus system in considerable detail and also covers the subject of inspection thoroughly.

## Remedies for Defects in Steel Castings

BY JOHN HOWE HALL

DEFECTS in steel castings may be divided into four classes, (1) pipes or other cavities due to contraction of steel and formed chiefly during solidification; (2) stresses set up and cracks formed by contraction of the steel in the solid or semi-solid state; (3) internal blow holes; and (4) surface blow holes, sand holes and other exterior imperfections. In this paper, the remedies for the four classes of defects mentioned above are discussed in detail.

Special attention is given to methods which will produce sound castings with a minimum loss of metal scrapped in the form of shrink heads, gates and runners. The causes of pipes are discussed and methods of preventing them by the use of chills, shrink heads and proper molding are pointed out. Chills in many cases are preferable to shrink heads. Many shrink heads are unnecessarily large and improperly located.

A shrink head should be placed and proportioned with due reference to the laws of fluid pressure. The design of the neck is also important.

The paper also discusses the proper proportioning of gates and runners; the advantages of gates at several levels in deep molds; the making of shrink head necks in cores; the causes of cracks and the proper remedies for them and methods of eliminating blow holes from steel castings. Obviously, imperfections must be prevented with the minimum loss of metal scrapped in the form of sink heads, gates and runners. Our metallurgists have not, up to the present time, studied these general principles so thoroughly as they have the proper methods to pursue in making steel of good quality; or, if they have done so they have not often published the results of their cogitations. Since the phenomena of the contraction of steel in solidifying and cooling are far from simple, it is plain on a little reflection that the expert should pay attention to the molding and pouring, equally with the steel making and annealing.

# The Electric Furnace in the Foundry

BY W L MORRISON

THE electric furnace for the production of steel castings is a subject of much discussion among the foundrymen of today. It will no doubt take some time and much patience on the part of those operating them, before reliable and tangible data on their operation and upkeep may be available. All new apparatus must go through the experimental stage; and as is the case with every such apparatus, or article for the market, there are several new electric furnaces offered the public each year which only add to the confusion of the foundryman investigating the advisability of installing such a unit. It is not intended here to take up any particular make of furnace, or discuss relative merits, but the writer will try to point out some of the difficulties met with in practice, and the possible future of the electric furnace.

There is a field for the electric furnace in the foundry, but the difficulties to be overcome should not be forgotten. Customers, as a rule, prefer electric steel, but are unwilling to pay a higher price for it; the electric furnace, therefore, must compete on an equal basis with the older methods of melting. Tool steel can be made cheaper in the electric furnace than in the crucible, but nevertheless, owing to natural conservatism, it will be several years before the crucible steel makers as a body will put faith in the electric furnace. Electric steel in the foundry can be made at from $27 to $35 a ton in the ladle.

Producing good steel economically depends largely upon the melter. While a steel melter can be trained for the electric furnace in a shorter time than for the open-hearth, this fact is too often abused, with the loss of heats and cold steel in the ladle. Then too, often the furnace is blamed for the results when the melter is really to blame. Only a short time ago when the manager of a large crucible steel plant investigated the operations of a certain electric furnace, he saw several cold heats of steel poured, and decided the furnace was not adapted to his class of work.

# Estimating Selling Price of Castings

BY A O BACKERT

TO ascertain the methods pursued by foundrymen in estimating the selling price of castings, an investigation was conducted, 1,000 letters having been mailed to all of the members of the American Foundrymen's Association and leading jobbing foundries of the United States. A series of 11 questions was asked and a total of 109 replies was received. It frequently has been stated that the number of foundrymen who make careful estimates on work is not large, yet the bulk of the replies received indicates that an earnest effort is being made to quote intelligently on new work. It cannot be denied that the practice of guessing at the selling price of castings is still too prevalent for comfort and it is hoped that some standard system of estimating will be evolved which can be followed by foundrymen generally. An earnest effort is being made by foundrymen generally to arrive at their overhead expenses, although it is evident that various methods are pursued and undoubtedly cost experts could point out many errors in the apportionment of the overhead expenses.

It was reported that practically one-half of the foundries employed estimators and operate estimating departments, while a number delegate this work to one of the plant executives. Only one empirical formula was reported for estimating the selling price of new work. The ratio of overhead expense to direct labor was found to vary considerably and as high as 3:1 was reported, although in some cases only 10 per cent was added to cover overhead charges. Numerous interesting replies also were received in answer to the question regarding percentage to profit estimated and in most cases competition governed this entirely. It is recommended that the cost committee pursue this investigation further with a view to establishing a standard formula for estimating the selling price of the foundry output.

# The Ductility of Malleable Castings

BY ENRIQUE TOUCEDA

THE aim of the author writing this paper is to demonstrate that the metal under the skin of malleable castings is ductile and of good quality, contradicting statements which are frequently made to the contrary. The author first briefly describes the process of manufacturing malleable castings and points out the similarity in the structure of malleable cast iron and wrought iron. The paper then goes on to describe some tests made on malleable castings as they were received from the foundry and also on castings which had been machined so that all of the outer skin was removed. These tests indicated that the metal in the core of properly made malleable castings is of superior quality and sufficiently ductile for all ordinary purposes. Good malleable castings possess virtues that have not received the recognition they deserve when their unique characteristics are considered. When cheapness, soundness, ease of machining, freedom from blowholes, ability to stand abuse in service, marked stiffness combined with ductility are considered as a whole, this casting has no competitor. Bad castings made by any process are worthless. The metallurgy of malleable iron is more complex and more difficult than that of any steel or iron process. Owing to this fact particularly, the industry has suffered greatly through the sale by some of a product that has served to place doubt in the minds of many as to the true physical characteristics of these castings.

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Bulletin O, recently issued by the Mesta Machine Co., Pittsburgh, describes and illustrates a number of rope drives which have been designed and installed by this concern. The bulletin, which contains eight pages, also includes some interesting data on the method of laying out rope drives for rolling mills, together with some information on the life of the Manila transmission rope.

# Varying Silicon and Carbon in Malleable

BY A L POLLARD

IT HAS been the custom since malleable iron mixtures first were made by analysis to consider silicon as the element of prime importance and it is only recently that the effect of carbon has been studied carefully. This paper contains a summary of a record of the analysis and physical properties of every heat for a period of eight months, showing the effect of varying the carbon and silicon. The low carbon mixtures showed a uniformly high ductility and where both carbon and silicon were low, the properties were unusually good. High silicon, low carbon mixtures also gave good results, and this is of economic importance, for with pig iron fairly high in silicon, a larger percentage of scrap can be used. The physical test used was that devised by Mr. Walker and standardized by Professor Touceda. Wedges 6 inches long and 1 inch wide by ½-inch at the base were cast, and annealed with the regular castings. The annealing was normal and was the same in all cases.

The condensed results are as follows, the analyses given being for the hard iron:

First Series:—

Carbon 2.30 to 2.40
Silicon 0.90 to 1.00—18 blows
Silicon 0.80 to 0.90—24 blows
Silicon 0.70 to 0.80—30 blows (1 test only).

Second Series:—

Silicon 0.90 to 1.00
Carbon 2.30 to 2.40—18 blows
Carbon 2.40 to 2.50—14 blows
Carbon 2.50 to 2.60— 9 blows
Carbon 2.60 to 2.70— 5 blows (1 test only).

Third Series:—

Silicon 0.70 to 0.80
Carbon 2.64—15 blows (3 tests).

In general, we conclude that where extreme ductility is desired the low silicon low carbon mixture is best, but for the average line of work a high silicon low carbon mixture will fulfill every requirement. It seems to reduce scrap and add greatly to the economy and ease of operation of the furnace.

A further economic consideration is that the higher fluidity of the high silicon low carbon heats means less loss in melting, and shorter heats. This greater fluidity is very pronounced.

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**It is not the stockholder, the president or the claim agent that is getting hurt. It is the man on the job. Get that into your workmen's heads and they will be interested in your safety plans.**

# Electric Motor Control for Foundries

BY S H LIBBY

THE selection of electric motors and controllers for foundry use presupposes the selection of the proper kind of electric energy to suit conditions, and while alternating current is in many cases as well adapted for foundry work as direct current there are places in which the direct current motor has a distinct advantage over the alternating current. The problem of proper motors and controllers for foundry use must be studied with reference to the selection of alternating or direct current; the type of motor; the type of control and the size of motors. For crane motors direct current is preferable and 230 volts is a desirable pressure if cost of insulation and copper are considered. The speed control of crane motors is important and while a rheostat control is suitable for handling flasks or pig iron, it is not satisfactory in lifting copes, drawing patterns or pouring. Foundry crane motors should handle considerable variations in load with but little change in speed. For general foundry purposes a compound wound motor with a 10 to 15 per cent series field is satisfactory.

In selecting controlling devices much will depend upon a careful study of the actual conditions, as a control which would be satisfactory in one case might prove entirely inadequate in another. For instance, if a machine is to be started and stopped frequently as would be the case of a lathe or planer, an automatic or push button control, of which little is generally known, would prove to be a good investment, in spite of the seeming high first cost. Such a control not only eliminates the results of carelessness or ignorance on the part of the operator, but also has the added advantage of safety in the event of failure of current, as under such conditions every thing goes to "off" position and the full cycle of operation must be performed again before the motor can be started.

# Safety First—Back With the Saloon

BY THOMAS D WEST

STATISTICS and careful investigations indicate that a large proportion of industrial accidents are due directly or indirectly to the use of intoxicating liquors. Furthermore, an investigation by the author disclosed a tremendous amount of clandestine tippling by the employes of foundries, mills and other industrial establishments during working hours. This practice is exceedingly dangerous. In order to break it up, the author urges that every member of the American Foundrymen's Association assist in the work of persuading our state legislatures to pass laws which will absolutely prohibit the operation of saloons within 500 to 1,000 feet of any foundry, mill, or other industrial establishment.

It is not enough, however, to cut off the saloon. A substitute must be found for the intoxicating beverages to which the men are accustomed. Many firms have introduced milk into their plants for this purpose, with surprisingly satisfactory results. As a consequence of the substitution of milk for beer, or other stronger intoxicants, accidents have fallen off, both in number and seriousness. There is little doubt but that several states before November will witness an agitation of questions involved in the use of intoxicants, especially in the cities, such as they have never seen before.

It behooves all desirous of advancing "Safety First" work to help shape events so that in any of the entanglements of politics to come, the saloon shall at least be forced back 500 to 800 feet from the property lines of foundries, mills, factories and other industrial plants in order to assist the work of reducing accidents.

# Sanitation in the Brass Foundry

## How a Large Car Building Company Protects Its Workers From Injury and Occupational Disease

BY FRED MOERL

FEW topics have commanded the attention of those engaged in the manufacture of brass products for the last two or three years, more than that of sanitation and safety first, and it is only fitting that this subject should receive due consideration. Nearly every issue of our various trade journals, contains articles treating on the subject, enlightening us as to what has been and what can be done in improving present conditions. The laws written on the statute books of the different states, as well as the compliance therewith and the voluntary application of safety devices, and adoption of sanitary measures on the part of the shop managements, are for the purpose of improving the welfare and conditions of working men.

And while it may appear that great sums of money are spent these days in this safety work with no direct cash returns in carefully scrutinizing results, we will find it not alone one of humanity, but also one of economy. For instance, a man working on a certain machine is injured and incapacitated for a week or two, which may require the machine to stand idle, or as is usually the case, the injured man is replaced temporarily by one not so familiar with that particular job. Consequently the output will not come up to the usual quality or quantity, which means a financial loss to the firm. How much better a man can work in a clean, well-lighted and well ventilated foundry or finishing shop, than in one presenting opposite conditions, is well known.

At the Buffalo convention of the American Institute of Metals, in 1912, Dr. Charles L. Parsons, representing the United States Government Bureau of Mines, brought up the subject of health conditions in brass foundries, and the discussion which followed demonstrated that many of those present were keenly interested in this problem of conserving human energy, and that several of the industries represented had already installed shower baths and other sanitary equipment.

July 1, 1911, the occupational disease act became effective in the State of Illinois, and at first the attitude of many of both employers and employes, was more or less hostile throughout the state. Some employers, considering it a new-fangled fad, reluctantly complied with provisions of the law and then only to such extent as to be within its absolute requirements. Others willingly and cheerfully installed the necessary equipment, and even went beyond that which was expected of them in providing safety and sanitary measures.

On the other hand, the men did not unanimously welcome the law as one made primarily for their welfare, and displayed more or less antagonism. They regarded the compulsory compliance on their part as an encroachment upon their personal liberties. At the Pullman Co.'s plant in Pullman, these conditions have been practically overcome, and what is now commonly known as the "Safety First" movement, is being more and more advanced by both management and employes.

In patent medicine advertisements we sometimes see an illustration of a person before and after using the highly recommended "cure-all-and-heal-over", and in recalling the sights while witnessing the earlier medical examination, and again those following a month or two later, we were vividly reminded of these ads. This refers to general personal appearance and cleanliness, particularly the teeth. The bad condition of the latter was astounding, and nearly every other examination resulted in the doctor's order, "Clean your teeth".

As my duties require the supervision of the manufacture of trimmings for approximately 2,000 cars a year, taking in not only Pullman, but also various contract cars for the different railroads throughout the country, my observations of the safety work are practically limited to the brass department, and outside of that, I can speak only in a general way.

That portion of the work at the Pull-

FIG. 1—POURING BRASS AT PULLMAN WORKS—THE MEN ARE ALL CLOTHED IN WHITE

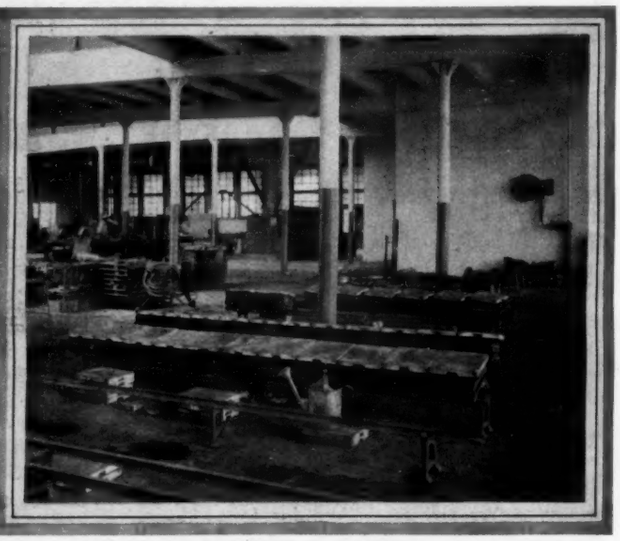

FIG. 2—THE SAME ROOM 30 SECONDS AFTER POURING, SHOWING EFFECT OF GOOD VENTILATION

A paper read at a joint meeting of the American Foundrymen's Association and the American Institute of Metals at Chicago, Sept. 8, 1914. The author, Fred Moerl, has charge of the foundries of the Pullman Co. at Chicago.

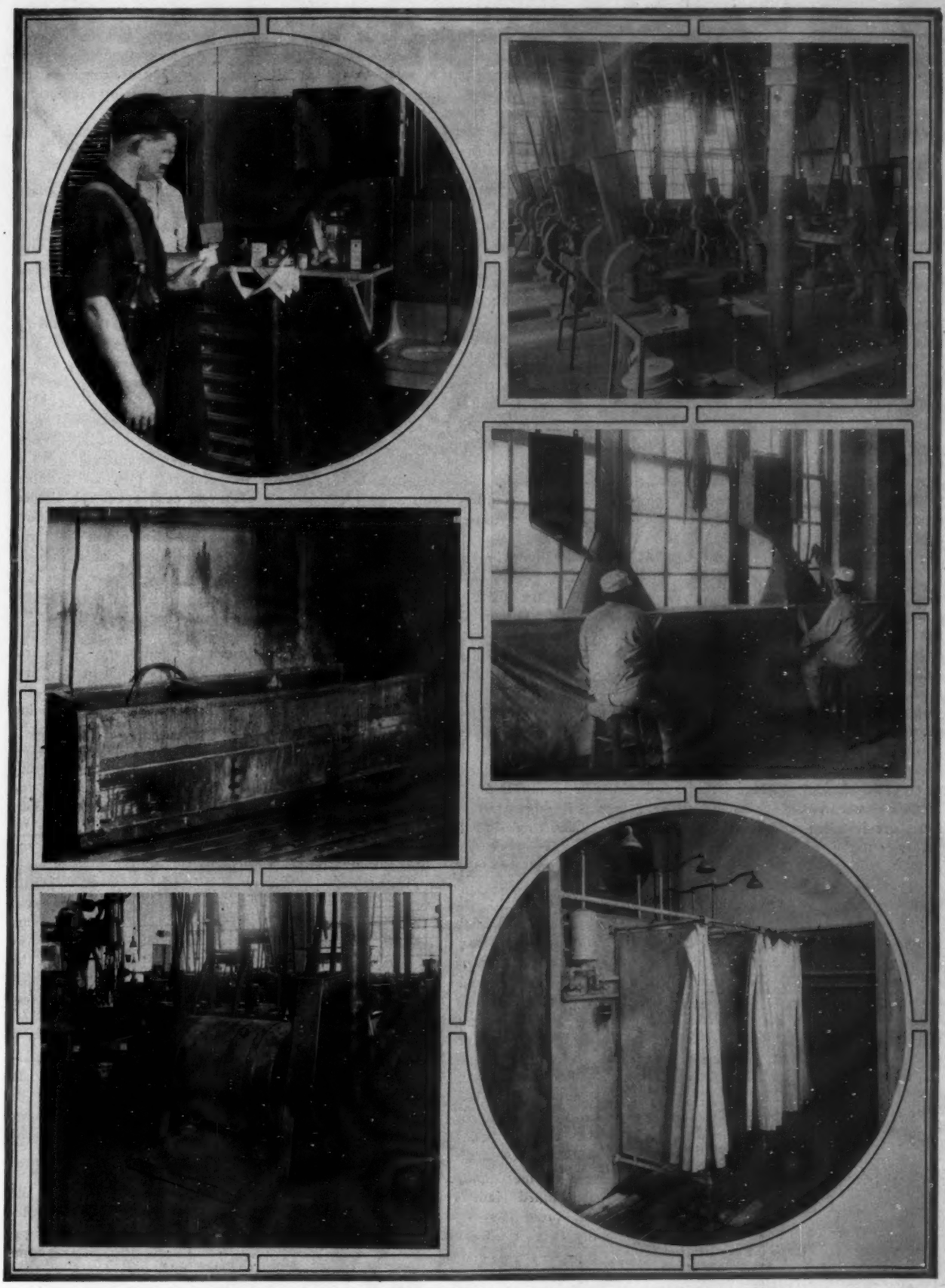

FIG. 3—FIRST AID CABINET IN WASH ROOM

FIG. 4—POLISHING WHEELS FITTED WITH DUST EXHAUST HOODS AND BELT GUARD

FIG. 5—EXHAUST FAN CONNECTION OVER DIPPING TANK

FIG. 6—SAND BLASTING UNDER A PROTECTING HOOD

FIG. 7—TUMBLER FOR BRASS CASTINGS FITTED WITH BELT GUARD

FIG. 8—THE MEN USE THE SHOWER BATH ON THE COMPANY'S TIME

man plant directly affected by the Illinois occupational disease act, is in charge of the safety department chief clerk, and it is his duty to supervise and regulate the medical examinations, baths, changing of overalls, jumpers, towels, etc., making proper entries on forms gotten up for that purpose. Molders, grinders, coremakers, melters, in fact all brass foundry employes, including the office force, polishers, buffers, platers, painters, glaziers and sand blasters, come under the supervision of this end of the department.

The safety engineer investigates and recommends relative to the compliance with Federal, state and city laws and ordinances regarding matters of sanitation, buildings and prevention of accidents. This end of the safety department takes in the entire plant.

Before we can put a man to work at any of the named occupations, he must first undergo a medical examination, made by the company's physician who reports on a regular form as to the applicant's health. When the application has been approved, the man may be put to work, but before commencing, the safety department furnishes him with a pair of white overalls and jumper, towels, nail brush, and, if necessary, goggles, respirator, rubber gloves or rubber apron. The goggles are supplied to grinders; rubber gloves and respirators to sand blasters. A proper record is kept of this transaction, and when leaving the company's service these articles must be returned to the safety department, where they are properly sterilized. Suitable shower baths are installed, and it becomes obligatory on the man's part to take a shower bath at least once a week, a certain time being allotted each department or part thereof for that purpose.

One-half hour is allowed by the management for each man every week, and no deduction of time is made while taking the bath. Once, and some cases, twice every week, he turns in his soiled overalls and jumper, and is furnished a freshly laundered set. The towels are also frequently changed the same way, and the respirators cleaned and sterilized at regular intervals.

Each employe coming under the regulations of the safety department, is allotted a two-compartment steel locker, equipped with a small mirror, proper shelving and suitable coat and hat hooks. Locks are fitted to individual keys; the keys are fastened to a key ring, together with the employes' gate house brass check. The lockers are divided into an upper and lower compartment; the upper for the street clothes, and the lower for the shop wearing apparel, and are so located in the different washrooms as to allow sufficient room for changing from street to shop clothes, or vice versa. The wash-rooms are equipped with long, and in some cases, individual wash-basins. The large ones have a number of faucets with running water, the latter being properly mixed to a suitable temperature in an adjacent large tank. Liquid soap containers are placed at regular intervals. Ten minutes prior to quitting time, these washrooms are opened to the men to wash in and change clothes, and by the time the whistle blows, they are all cleaned up, and in leaving the works many might well be taken as belonging to the office force.

### *Medical Examination Once a Month*

Every employe in the brass foundry and finishing departments must undergo a medical examination once every month, and if found affected with plumbism, or any disease peculiar to the trade at which he is working, he is most closely scrutinized with a view of overcoming the cause of the ailment, which usually results in the correction of some slight improper practice, and the consequent disappearance of symptoms. In the more severe cases and those where no correction can be made, other employment is found, but even then the case is kept under the doctor's surveillance until complete recovery.

One of the great problems in the brass foundry and brass finishing shop, is that of ventilation. While the construction of some of the older buildings is such as to necessitate artificial means of removing fumes and foul air, yet buildings of more modern types are, or should be, so designed as to insure natural ventilation by providing sufficient windows and sky-lights, which can be easily and quickly opened and closed. In summertime this will work out without any great difficulties, but in cold weather we find that the men object more or less to the opening of the windows, and some would rather inhale the metal fumes. In such cases we found that the factory inspector insisted upon opening everything during pouring time. In the accompanying illustrations will be found reproductions of two photographs. One picture was taken while pouring, and the other was snapped in the same position as soon as the smoke had cleared away, which was only 30 seconds.

The floors in the brass foundry should be kept moist at all times, and one of the laborers delegated to liberally use the sprinkling can. Under no circumstances should any one be allowed to eat lunch in the foundry, polishing or plating rooms, and suitable places should be provided for that purpose. The Pullman car works was one of the first shops to meet all and even went beyond the requirements of the occupational disease act, and the management at all times is willing to consider any new safe-guarding device, or suggestions of health measures.

The emery wheel exhaust heads and guards were designed and made in our own plant. The exhaust heads are made of ⅛-inch sheet iron, and the guard bands of ¼-inch boiler plate, assembled by oxy-acetylene welding. The whole head is arranged to slide, so as to take up for the wear of the wheel. The lower portion of guard front can be adjusted so as to close off that part of wheel not in use. The lid for removing the wheel is hinged, and when closed is fastened by a catch, as well as a bolt and nut, serving as stress members in case the wheel bursts.

Our shower baths are equipped with a mixing tank, which is supplied with hot and cold water, regulating it to a suitable temperature. They are grouped in sets of seven, each again sub-divided by canvas curtains, for the individual bath. Vapors are drawn out by large natural draft ventilators, placed in ceiling or side wall.

We have 28 "First Aid" cabinets placed around the different departments of the works, and about 70 men are trained to do first aid work. The first surgical attention is received in the "first aid" room, and in case of fracture the X-ray apparatus is used for determining the mode of procedure. Photographs are taken of all fractures. While we term it the "first aid" room, the equipment and facilities are sufficient for handling any minor or more serious operations.

To clear a dipping room from the obnoxious acid fumes is a difficult task. After trying out various schemes and ventilating systems, we found an 18-inch wall type fan run at 1,700 revolutions per minute direct connected to a motor, the most effective. The motor must be either encased or the fan shaft extended into the next room and there connected.

Guards completely enclose the tumbling barrels and also the belts up to a man's height. The belt guard is arranged to open easily and quickly in case of belt repairs. The portion of guard over the tumbling barrel proper can be opened similar to the roll top of a desk.

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The operating department of the American Rolling Mill Co., Middletown, O., is continuing the publication of the bulletins which were commenced in April. Recent issues which have been unusually attractive have been devoted largely to safety-work, the May number particularly containing a large number of valuable safety pointers.

# A Cast Iron of Unusual Structure

## A Discussion of the Peculiar Characteristics of a Cast Iron With a Strength of 42,000 Pounds Per Square Inch

BY K W ZIMMERSCHIED

FROM time to time a number of able articles on the structure and properties of cast iron have appeared treating, collectively, of all the grades and varieties of metal. In the examination of many samples of iron entering into the structure of important automobile parts, the writer has had a good opportunity to test the theories presented in these articles, by applying them to the structures encountered. In the main, these theories are well borne out by the facts in practice; often we encounter cases, however, wherein the hypotheses advanced do not suffice to explain the situation entirely. There seem to be additional factors entering into the problem which need elucidation, and we hope to be able to go into these at some future time. The purpose of this article is to present a rather unusual case, in substantiation of published theories, in as untechnical a manner as the subject allows, first sketching as briefly as possible the substance of these theories.

Ever since Professor Henry M. Howe's presentation of his conceptions, cast iron through its whole range from malleable to white iron has been considered in the light of an extension of the steel series, in which the graphite, when present, plays the role of a large admixture of foreign matter. This steel matrix may, exclusive of the graphite present, be itself either low or high in combined carbon, and may vary within wide limits as to the amount of other elements present. The properties of any good sample of iron will therefore depend upon (1) the properties of the steel matrix, and (2) the physical influences of the substances embedded therein.

In the case of blackheart malleable iron, where all the carbon in the interior of the casting is in the combined form after the annealing processes, the properties of the finished part are very similar to those of a very low carbon steel, as is well known. There are other products which have similar characteristics, one of which is shown in Fig. 1. This

Paper read at the annual meeting of the American Foundrymen's Association Chicago, Sept. 8-11.

FIG. 1—IRON WITH GRAPHITE PRESENT IN LARGE PLATES
Magnified 500 Times and Etched with Picric Acid

FIG. 2—IRON CONTAINING SOME COMBINED CARBON
Magnified 100 Times and Etched with Picric Acid

FIG. 3—STRUCTURE OF DARK MATERIAL SHOWN IN FIG. 2
Magnified 500 Times and Etched with Picric Acid

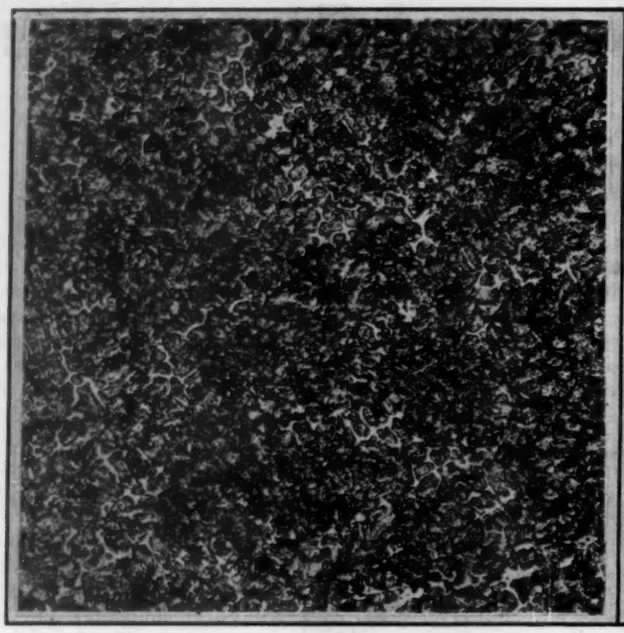


FIG. 4—IRON WITH CARBIDE STRUCTURE
Magnified 100 Times and Etched with Picric Acid

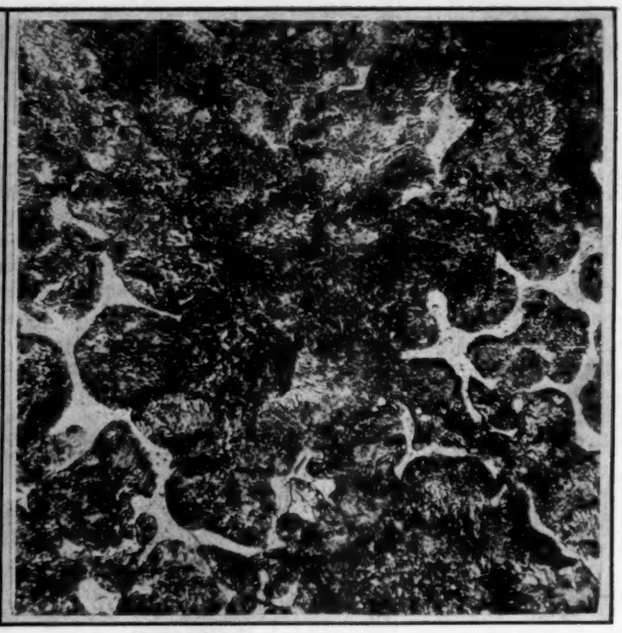


FIG. 5—STRUCTURE OF THE WHITE, HIGH CARBON PORTIONS OF IRON SHOWN IN FIG. 4
Magnified 500 Times and Etched with Picric Acid

iron is free from combined carbon, and has been so slowly cooled that the graphite is present in large plates. It is therefore very much like an annealed malleable casting in the large amount of free iron present but is very different in the condition of the uncombined carbon and this difference is manifested by the much greater brittleness caused by the large graphite plates. It happens that the sample pictured in this photograph contains enough phosphorus to give rise to phosphide-carbide eutectic, which is very clearly shown in the center and between two large plates of graphite, embedded in ferrite or pure iron. This constituent adds to the brittleness of this sample.

In Figs. 2 and 3 is illustrated an iron containing some combined carbon. Fig. 2 is a sample etched with picric acid and photographed at a magnification of 100 diameters. In it we find a very considerable amount of graphite, which is present in black curved plates; between these plates we find a large amount of dark material, and surrounding them a considerable amount of a white constituent, which is pure iron or ferrite. The structure of the dark material is better seen in Fig. 3, taken at 500 diameters. It is very likely that the primary graphite plates in this sample were formed by the decomposition of carbide, while the iron was still in a mushy condition, that is, viscous enough to allow the crystals of this

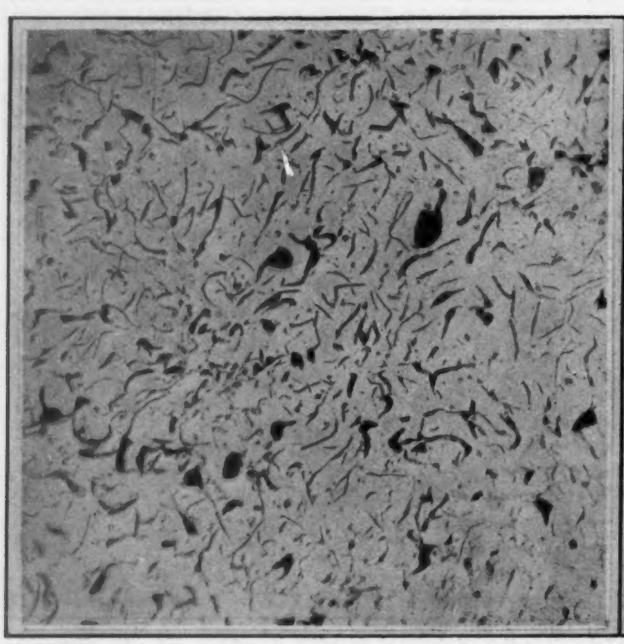


FIG. 6—CENTER OF A 1-INCH BAR
Magnified 100 Times and Polished

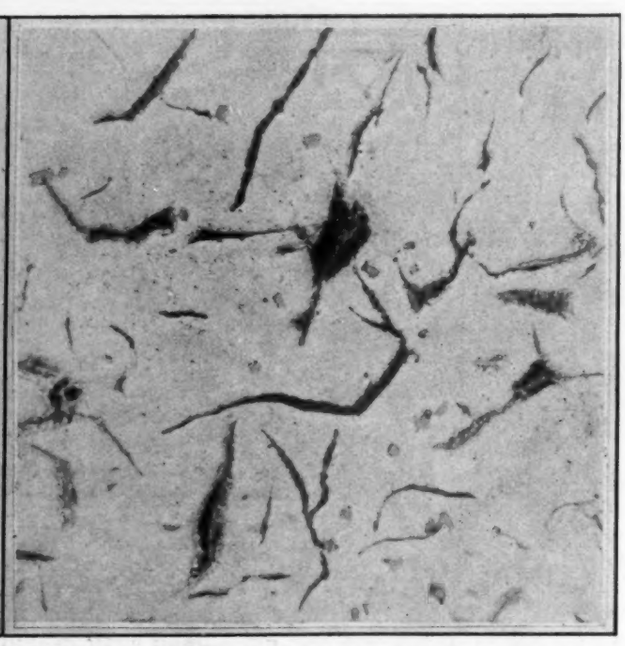


FIG. 7—SAME SECTION AS SHOWN IN FIG. 6 WITH INCREASED MAGNIFICATION
Magnified 500 Times and Polished

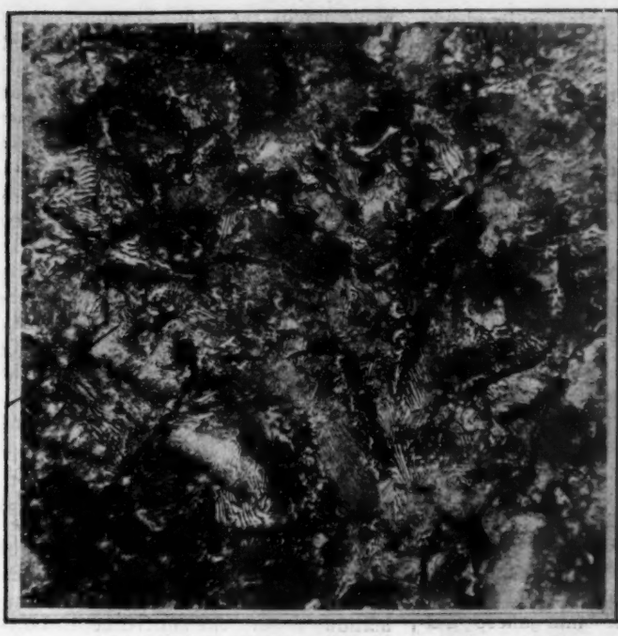


FIG. 8—STRUCTURE OF BAR SHOWN IN FIGS. 6 AND 7
Magnified 500 Times and Etched with Picric Acid

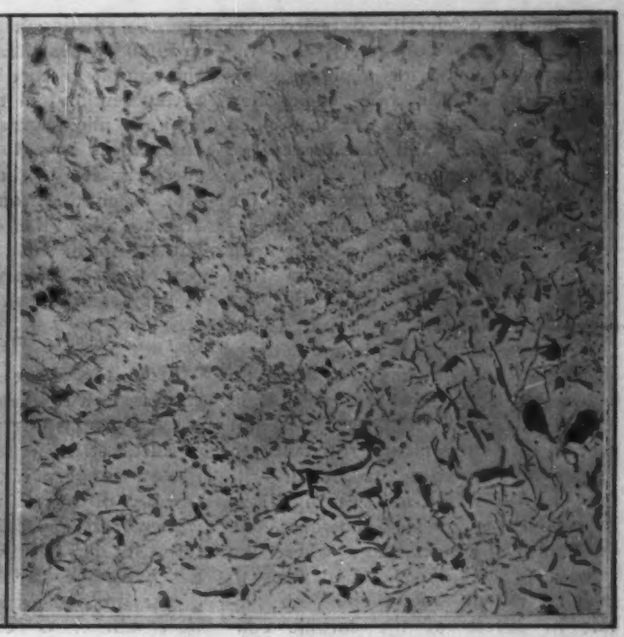


FIG. 9—STRUCTURE NEAR EDGE OF BAR SHOWN IN FIG. 6
Magnified 100 Times and Polished

element to take their natural form. As the metal cooled, there was additional decomposition of the surrounding metal, which resulted in the formation of pure iron on the one hand and of deposited graphite on the surface of the original plates on the other. It seems that the presence of a small amount of graphite acts as an energizer in the decomposition of additional carbide, which explains the circumstance that the crystals of free iron are very seldom isolated in the middle of the dark areas, but are most often found surrounding the primary graphite crystals. The dark areas consist of eutectic, which is known to metallographists and probably to the most of those who have paid any attention to this study, as pearlite, that is, a constituent which contains about 0.90 per cent of combined carbon and which occurs in slowly cooled steel. It is composed of alternate plates of carbide of iron and, since the carbide is a hard and brittle substance, its effect upon this structure is to reinforce the ferrite associated with it and to strengthen it, very much as steel bars reinforce and strengthen a mass of concrete. It goes without saying, therefore, that, the higher the pearlite content of an iron or steel, all other things being equal, the higher the tensile strength and the lower the ductility of the metal as a whole.

Concerning the causes which underlie in occurrence of these constituents, and the relative amounts of them, it is well known that the balance between silicon on the one hand and sulphur and manganese on the other, taken together with the rate of cooling, exert the greatest influence. As the percentage of silicon rises or as the rate of cooling increases, the amount of free carbon increases and

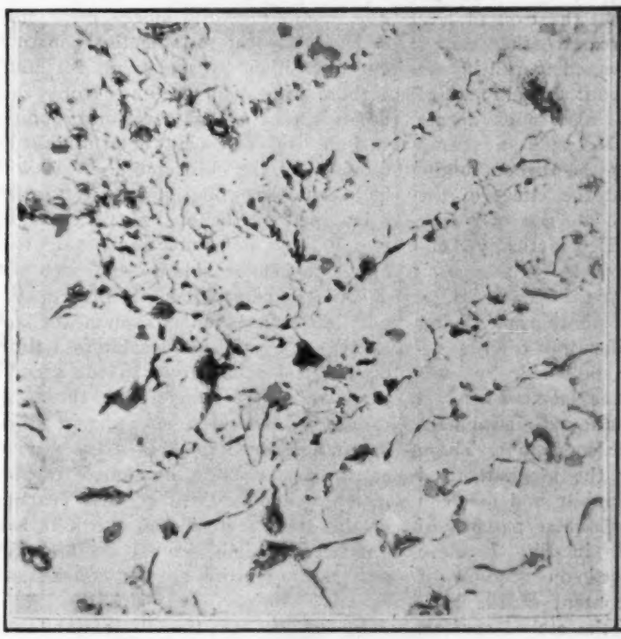


FIG. 10—STRUCTURE NEAR EDGE OF BAR SHOWN IN FIG. 6
Magnified 500 Times and Polished

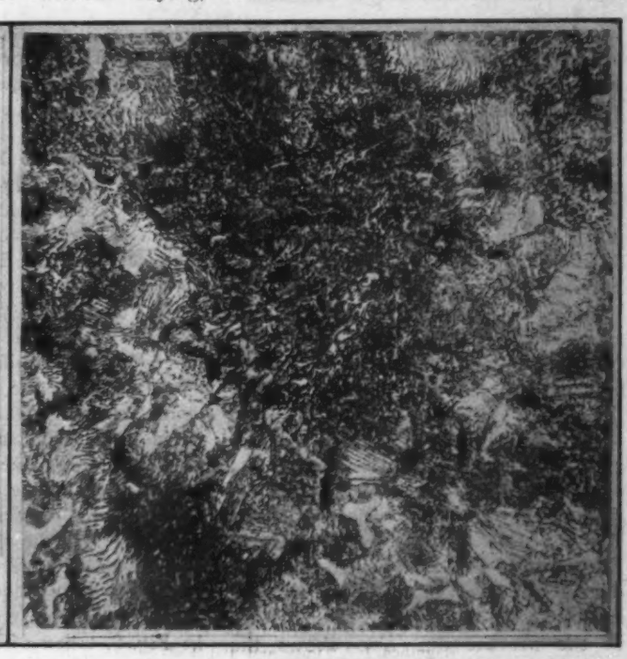


FIG. 11—INTERNAL STRUCTURE OF BAR NEAR EDGE
Magnified 500 Times and Etched with Picric Acid

the amount of ferrite or pure iron also increases; conversely, as the amount of sulphur or manganese increases or as the rate of cooling decreases, the amount of combined carbon increases and the percentage of ferrite decreases.

The first effect of increase in the combined carbon is to cause an increase in the amount of pearlite with a corresponding increase in the strength of the iron. When this has progressed to such a point as to give us a structure made up entirely of pearlite and graphite we obtain an iron which is the strongest possible in tensile strength, although it is not necessarily the most resistant to shocks, on account of its greater brittleness. When the amount of silicon is sufficiently reduced however, we come into the next stage where the amount of combined carbon rises to such an extent that it exists as carbide in excess of the carbide contained in the structural entity which we have described as pearlite. An example of this condition is given in Figs. 4 and 5, which illustrate an iron containing 2.15 per cent silicon. In Fig. 4, taken at 100 diameters from the etched specimen, we find again a considerable amount of white material. In this case, however, it has a very different form from that seen in Figs. 2, and 3 and is very easily distinguished from ferrite in the original sample, owing to the fact that it stands up from the surface in decided relief, after polishing. This constituent contains free carbide in excess of the carbon occuring in pearlite and is so hard and brittle that it has an even greater influence upon the brittleness of the iron in which it is embedded, than has the graphite with which it is also associated. An examination of Fig. 5, taken at a magnification of 500 diameters, shows how this white, high carbon constituent occurs embedded in the pearlite and also shows the very finely divided condition in which the graphite occurs, the latter being scarcely distinguishable in its background of pearlite. It happens that the sample pictured here was cast in a thin section and that it is also quite high in phosphorus. These two circumstances have the effect of causing the graphite to be deposited rather late, after the iron has become too stiff to allow the carbon to take its natural form, with the result that it occurs most frequently in such cases, in very small particles.

### *Limits are Narrow*

From the above examples and discussion it will be seen that the limiting conditions for obtaining an iron of ideal structure cover only a very narrow range. We have met with a number of irons in automobile castings which approximated this structure, but have only one good sample which can be said to consist entirely of pearlite and graphite, with the possible admixture of manganese sulphide. Analysis shows this iron is higher in silicon than the iron in Fig. 1 and will therefore, all other things being equal, be expected to run higher in uncombined carbon; the amount of sulphur, however, is also much higher and this element has such a strong influence in holding the carbon in the combined form that the effect of the silicon is overcome to the end that the steel matrix is practically "eutectoid."

Fig. 6 illustrates the center of a one-inch bar, the photograph being taken at a magnification of 100 diameters, from the polished, but unetched surface of the iron. Fig. 7 is taken at a magnification of 500 diameters, under the same conditions. These two pictures show the medium sized curved plates of graphite and between these we find the globular patches of manganese sulphide in Fig. 7, these being so pronounced on account of the high sulphur content of the iron. In Fig. 8, taken of the etched surface, at a magnification of 500 diameters, we find that the internal structure is made up of the same graphite plates which are prominent in the unetched sample, surrounded entirely by sharply defined lamellar pearlite, without any evidences of ferrite on the one hand or of cementite or free carbide on the other.

Figs. 9 and 10 show the structure of the unetched iron, at 100 and 500 magnifications again, at a point near the edge. The quicker cooling on the outside has given rise to a characteristic pseudo-crystalline structure, which structure forms a very interesting study by itself. Suffice it to say that at this time, however, we again have graphite in finer plates than occurred in the center of the casting, although the internal structure as given in Fig. 11 is practically the same. In the center of this photograph is a rather large dark area, in which the lines of pearlite are much less distinct than in the lighter portions. A close examination under the microscope however, reveals the fact that the substance is practically a mass of very fine pearlite, in which is embedded a considerable amount of rounded graphite. The presence of a very few small areas of free carbide in this photograph can also be attributed to the quicker cooling near the edge which has allowed insufficient time for the establishment of perfect equilibrium.

It will be noted that the combined carbon in this sample is reported as being 0.64 per cent, which is considerably below that generally ascribed as pure pearlite. This circumstance is explained in part by the unavoidable errors which creep into the methods of analyzing a cast iron for combined carbon; since our only methods for determining this constituent are either by analyzing for total carbon, then substracting from this the result of an analysis for graphitic carbon; or else by determining it directly by the color method. It will be seen that one procedure is at least open to the combined errors of two indirect determinations, only one of which can be said to approach the exactness of our other chemical methods; the other depends upon the accuracy of a colormetric determination of doubtful reliability. In the second place we must deduct from the total weight of iron, the amount of other impurities present, in order to arrive at the amount of combined carbon which would count for total pearlite in the steel matrix and, third, it has not been established beyond a doubt that total pearlite always consists of exactly 0.90 per cent carbon.

In support of the contention that the increase of pearlite accompanies

(*Continued on page* 504b.)

KEY TO FIGURES AND COMPOSITIONS.

| Figure. | Magnifications. | Etching Medium. | Chemical Composition. C. C., per cent. | G. C., per cent. | T. C., per cent. | Mn., per cent. | P., per cent. | S., per cent. | Si., per cent. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 500 | Picric | Trace | 3.52 | 3.52 | 0.42 | 0.409 | 0.027 | 2.53 |
| 2 | 100 | Picric | 0.25 | 2.48 | 2.73 | 0.52 | 0.316 | 0.114 | 3.12 |
| 3 | 500 | Picric | 0.25 | 2.48 | 2.73 | 0.52 | 0.316 | 0.114 | 3.12 |
| 4 | 100 | Picric | 0.79 | 2.48 | 3.27 | 0.26 | 1.221 | 0.090 | 2.15 |
| 5 | 500 | Picric | 0.79 | 2.48 | 3.27 | 0.26 | 1.221 | 0.090 | 2.15 |
| 6 | 100 | Polished | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |
| 7 | 500 | Polished | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |
| 8 | 500 | Picric | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |
| 9 | 100 | Polished | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |
| 10 | 500 | Polished | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |
| 11 | 500 | Picric | 0.64 | 2.30 | 2.94 | 0.47 | 0.137 | .0136 | 3.12 |

## Pilot Operated Valve

Those who operate high pressure hydraulic presses requiring large volumes of water find it advisable to use an operating valve with sufficient internal areas for this service, which also can be easily controlled. It is a simple matter to design a valve with large openings and large valve seat areas but the difficulty arises in its manipulation. The Hydraulic Press Mfg. Co., Mount Gilead, O., recently has perfected a three-way, pilot-controlled, poppet operating valve, which is designed to meet the conditions outlined above.

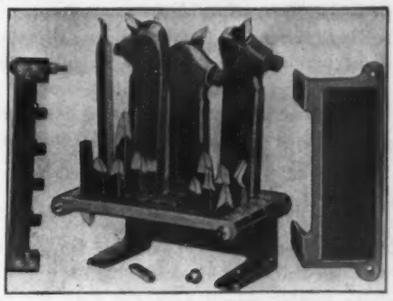
This valve has a steel body built for a pressure of 5,000 pounds per square inch and upward. It has double checks and flanged connections. Special gun metal bronze is used in constructing the valve seats and checks. The operating cylinder, glands and rams are cast steel.

The valve is controlled by means of two small pilot valves, marked *A* and *B* in the accompanying illustration. They are necessary on account of the large area of the main valve openings. The controlling valves need not be located near the main valve, but may be placed at any convenient point.

The main valve has three openings and four positions. The first applies the pressure to the press; the second holds the pressure on the press, line and pump; the third holds the pressure on the pump and line and relieves it from the press, and the fourth position relieves the pressure from both the press and pump.

## Holder for Small Tools

C. H. Driver, Racine, Wis., has designed a rack for keeping small tools, such as lathe tools, drills, etc., in an orderly manner. As shown in the accompanying illustration the rack is made sectional and the various sections are interchangeable. This feature makes it possible to make up racks to hold



HOLDER FOR SMALL TOOLS

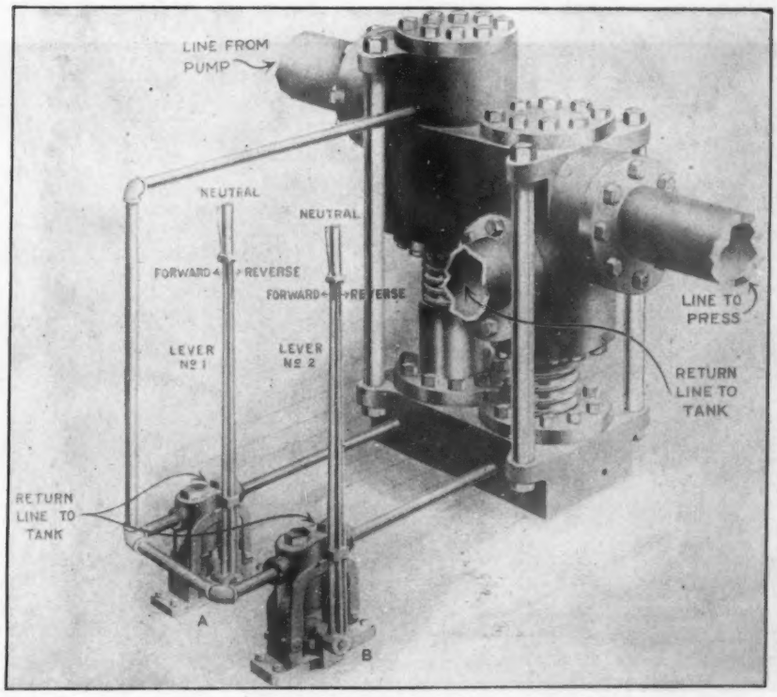
tools of different sizes, each section being devoted to tools of one size. In this case, the rack is so adjusted that tools of a given size can be inserted only in their own section. This prevents any confusion resulting from miss-filing the tools. The racks are designed so that they can stand on tool boards or can be fastened to side walls, posts or other convenient places on the machines that are to equipped with them.

## New Acetylene Generator

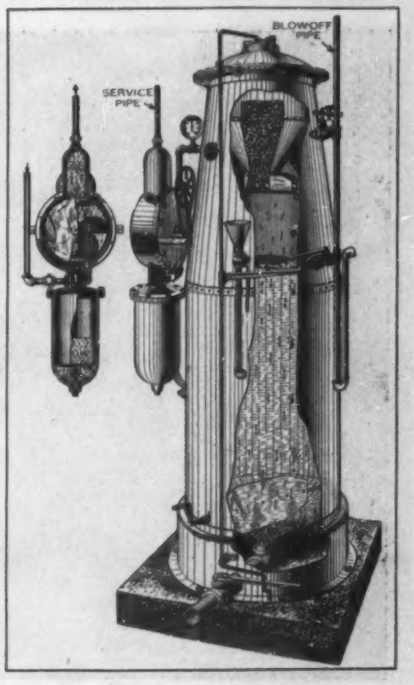
An acetylene generator with interesting features is being marketed by the Vulcan Process Co., Minneapolis and Cincinnati. This generator is designed for service in connection with autogenous welding outfits and the design of the machine has been made as simple as possible consistent with satisfactory operation. The carbide feed is so arranged that the quantity of carbide dropped into the water is accurately measured and is varied to suit the demands made on the gas supply. This assists in producing a clean, cool gas at uniform temperature. Standard size ⅜ x 1¼-inch carbide is used. The motor that drives the automatic feed utilizes the buoyancy of the gas passing from the generator to the torch and thus the feed is increased as the gas consumption increases, or vice versa. Also the feed is automatically stopped and started when the welding torch is turned off or on.

The carbide chamber and feed mechanism are removable. The generator is protected against careless manipulation by a locking device which prevents the removal of the cap for refilling or opening any of the valves, without following a definite safe, routine.

**You must imbue the employe with the idea that it is not the company but himself who suffers and his wife, who is left a widow. That is the only way in which you can stop accidents.**




PILOT OPERATED POPPET OPERATING VALVE




NEW ACETYLENE GENERATOR

# New Franklin Mill

## Extensive Plant at Franklin, Pa., Has Been Rebuilt, Enlarged and Improved

E. E. Hughes, General Manager

ON MAY 5, 1913, the bar mills of the Franklin Steel Works, located at Franklin, Pa., were almost totally destroyed by fire. Although there was no question as to the advisability of rebuilding the plant, there was some doubt as to whether to rebuild at Franklin or seek another location, and owners of the mill spent several months investigating other sites. After a thorough investigation, it was decided Franklin was as favorable a location as could be selected, having freight rates both east and west, equal to those enjoyed by industries in the Pittsburgh district. As an added inducement to locate in Franklin, the Board of Trade at that center, arranged at considerable expense to provide additional land for the future extension of the plant; consequently it was finally determined to build on the old mill site, and actual construction work was begun in the autumn of 1913.

The design and supervision of the construction of the new plant was awarded S. Diescher & Sons, consulting engineers, Pittsburgh, who designed and erected the original mill, built in 1902-03.

### *Specialized on Reinforced Steel*

The Franklin Steel Works for years has specialized on steel bars for concrete reinforcement and will continue to make this line the principal part of the output, but the company also will continue the manufacture of angles, channels, channeled flats, cultivator beams, tees, U-bars, etc., such as are used by makers of agricultural implements and metal furniture.

The general layout of the mills, which resumed operations early in July, is interesting. Raw material in the form of steel rails and billets is brought in under a yard crane runway, 487 x 75 feet, equipped with a 10-ton electric crane, Fig. 2, built by the Pawling & Harnischfeger Co., Milwaukee. The rails are unloaded with this equipment, sorted as to weight and length, and very carefully inspected, all unsuitable rails being eliminated. They are then placed upon an electrically operated skidway, which moves them to a continuous heating furnace, in which they are given a long, slow, soaking heat. This furnace, which is of modern design, is coal fired by hand and has no special features.

When the rails have passed through this furnace and are brought to a rolling temperature, they are ejected onto a power driven delivery table and carried to 18-inch slitting rolls, Fig. 1.

This train or rolls consists of pinions and a three-high stand of 18-inch steel rolls. In the first pass, the rail is separated into three parts, head, web and flange, which, without being reheated, pass on to a 12-inch train consisting of five stands of 12-inch three-high rolls and one stand of 12-inch two-high rolls. The latter are shown in Fig. 5.

The combination 18-inch and 12-inch mill is driven by a 30 x 48 inch piston valve engine built by the Bass Foundry & Machine Co., Fort Wayne, Ind. The engine is controlled by a Nordberg governor. The engine is direct connected to the 18-inch slitting mill and also operates the 12-inch train by means of a rope drive.

In the process of reducing the rails

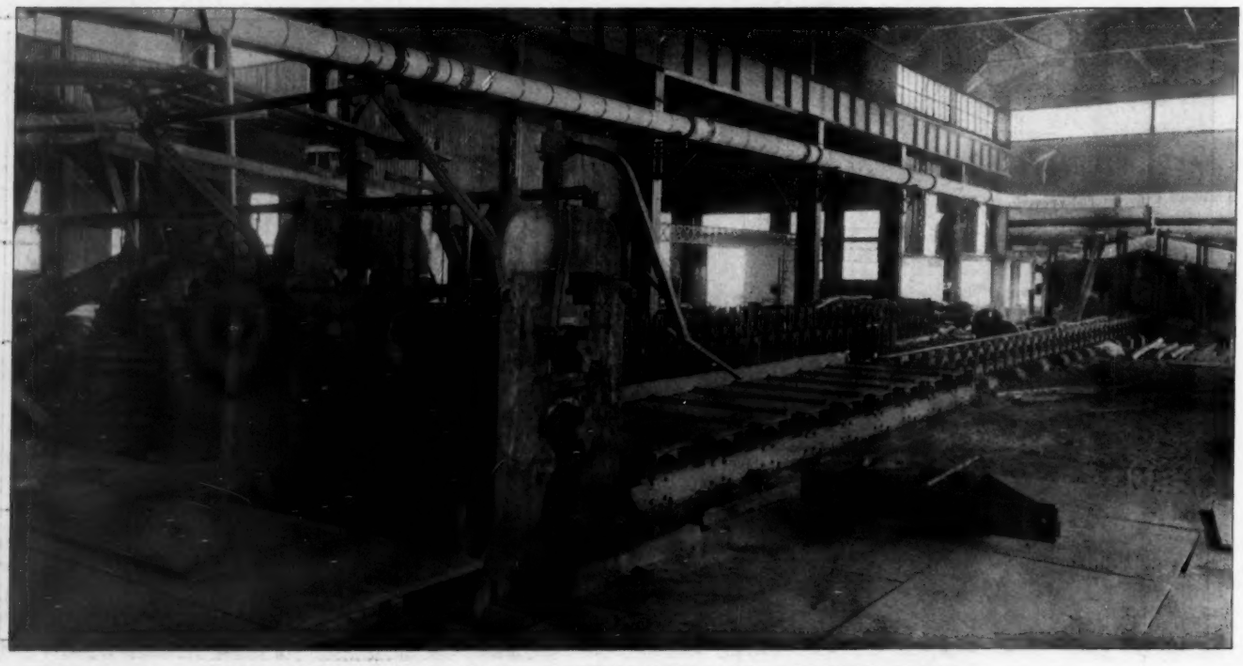


FIG. 1—EIGHTEEN-INCH SLITTING ROLLS AND DELIVERY TABLE

# Now Rolling Steel

## A Rerolling Mill With Interesting Layout and Rope Drive Making a Varied Product

BY C F WILLIAMS

C. F. Mackey, Assistant General Manager

to the various shapes and sections representing the output of the Franklin works, the 18-inch stand performs practically the same work at all times, its purpose being to furnish suitable billets for the 12-inch train of rolls. These billets, formed from the head, web and flange of the rail, pass to the 12-inch rolls, where they are worked down into the finished products. The 12-inch rolls are so grooved and the auxiliaries around them so arranged, that a number of different products may be finished at the same time, each stand of rolls having its own hot bed and runout. The runouts are designed so that they can take care of either plain or twisted bars, or shapes. Each of the hot beds is equipped with a specially built high-speed automatic twister, capable of handling all sizes of bars. Both sides of the 12-inch mill are equipped with cropping shears, which remove any bad ends that may occur during the rolling process.

As a safety precaution and to prevent rapid cooling of bars, both sides of these mills are equipped with underground conduits to receive the hot bars during the rolling operation. The hot beds are constructed of sectional steel gratings, slightly inclined. They vary in length from 75 feet to 150 feet.

From the hot beds, the material passes to shears and straighteners. The shears have specially constructed, structural steel gages to insure accuracy in cutting and to permit of several different lengths being sheared at one time. The hot beds are equipped with six shears, Fig. 4, which give a shearing and shipping capacity that will keep pace with the mills.

### *The 9-inch Mill*

In addition to the 18-inch and 12-inch mills, is a 9-inch mill, Fig. 7, built by the Lewis Foundry & Machine Co., Groveton, Pa., which is operated entirely separate from the other mills by a 20 x 36-inch Hamilton-Corliss engine, built by the Hooven, Owens, Rentschler Co., Hamilton, Ohio. On this mill are rolled rounds and squares, ⅜-inch and under, small angles, channels and miscellaneous shapes. The finished products are rolled from billets obtained in the open market or from billets produced by the 18-inch mills. These billets are heated in a 10 x 28-foot coal-fired heating furnace and pass from the furnace to the mill by hand.

One of the chief features of the bar mills is a large finishing and shipping department where ample room is provided for handling the finished material rapidly and accurately as it comes from the mills. Shipping tracks pass through the end of this department and two, 10-ton Pawling & Harnischfeger electric cranes afford facilities for loading and handling the steel. Facilities are provided for handling empty and loaded cars by means of an electrically driven car-puller located below the floor. The cars are moved by means of a wire cable passing around a drum and over sheaves.

The building which houses the mills and equipment described above, is a steel structure of heavy design, 620 x 75 feet. In connection with this main building, are auxiliary buildings, includ-

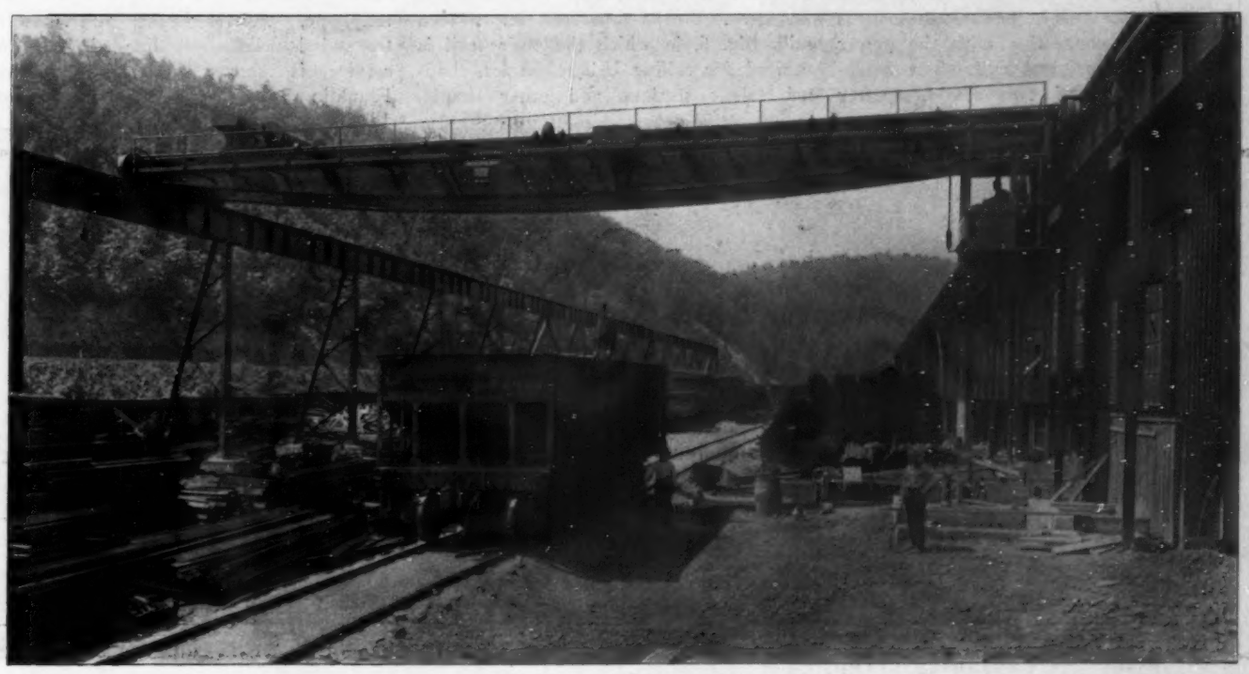


FIG. 2—YARD CRANE AND RUNWAY

FIG. 3—MOTOR DRIVEN ROLL LATHE

FIG. 4—COOLING BEDS AND SHEARS

ing an engine room and store house, 100 x 45 feet; blacksmith shop, 45 x 25 feet, and roll shop, 65 x 35 feet.

The roll shop is equipped with four lathes, three of which are driven by motors and line shaft, and the fourth by motor direct. The lathes are all set on concrete foundations, which are provided with pits to receive the turnings. These pits are so built that the turnings pass into pockets outside the foundations, making it possible to remove them without disturbing the operator. The roll shop is provided with the customary emery wheels, grind stones and other equipment.

The power house is equipped with a battery of six boilers, developing 1,600-horsepower, located in a steel building, 100 x 45½ feet, erected by the Pittsburgh Bridge & Iron Co., Pittsburgh. The electric generating department is operated in connection with the power plant of the original mill. The equipment consists of two 150-horsepower engines, each driving a 75-kilowatt Northern generator. To this has been added 14¼ x 25 x 21-inch tandem compound Buckeye engine, built by the Buckeye Engine Co., Salem, Ohio. The engine is direct connected to a 200-kilowatt Westinghouse generator operating at 150 revolutions per minute.

All the buildings, with the exception of the power house and 18-inch mill building, were erected by the McClintic-Marshall Co., Pittsburgh. The new buildings are all equipped with steel window frames and sash. The steel water tank and tower were furnished by the Des Moines Bridge & Iron Works, Pittsburgh.

### *How U-Bars are Rolled*

In addition to the new mills and equipment described above, the Franklin Steel Works operates an 18-inch mill, Fig. 6, in which the entire rail is utilized for rolling U-bars, angles, channels, deck sections and other shapes, used largely in the manufacture of brake beams, transmission towers, and a special steel pole, patented by the Franklin company. The 18-inch mill is located in a building, 250 x 75 feet, erected by the Fort Pitt Bridge Works, Pittsburgh. It is served by a 5-ton Pawling & Harnischfeger electric crane. This mill is designed for handling the whole rail. In most respects, the method followed is similar to that employed in the 9-inch and 12-inch mills, but instead of slitting the rail into three parts, the entire rail is broken down in one heat. The head and flange are reduced uniformly and the web increased until the whole results in a suitable billet for the sections to be rolled. The U-bar is used in the manufacture of the steel pole mentioned above. The pole is employed for overhead construction, such as telegraph, telephone, electric light and power transmission lines. A line of poles in service is shown in Fig. 8. The Franklin Steel Works has specialized

FIG. 5—TWELVE-INCH MILL, SHOWING THREE-HIGH AND TWO-HIGH STANDS

FIG. 6—EIGHTEEN-INCH MILL AND TABLE

since 1902 in the manufacture of steel poles.

Although the design of this steel pole is unusual, its construction is rather simple. The pole is composed of three pieces of steel U-bar, rolled from rails, arranged at angles of 120 degrees around a vertical axis. The three members are bound together by malleable iron clamps, usually referred to as collars and spreaders which are bolted between the legs and drawn down tight after having been driven into place. By this method, it is claimed, a rigid fastening is secured without the necessity of any bolt or rivet holes being drilled in the U-bars, thus leaving the three main members of the pole unimpaired in strength and in one continuous piece. The poles, towers, brake beams, etc., manufactured at the works, are made from members rolled from high carbon rail steel having an elastic limit of from 50,000 to 60,000 pounds per square inch and an ultimate strength of from 90,000 to 100,000 pounds.

The pole and transmission work is handled in a steel building, 165 x 75 feet. This department is equipped with punches, shears, and other fabricating machinery and the building is served by an electric crane having a lifting capacity of five tons, built by the Cleveland Crane & Engineering Co., Wickliffe, Ohio.

Although the Franklin Steel Works has rolled sections used in the manufacture of brake beams for many years, the actual assembling of the beams has previously been done at the plant of the Chicago Railway Equipment Co., Chicago, the parent company. In building the new mill, provision was made to assemble the material at the Franklin Works, and a complete brake beam department is now housed in a brick and steel structure, 260 x 150 feet.

The plant is located on the Erie railroad, with shipping arrangements to the Lake Shore and Pennsylvania systems. With the completion of the new mills and buildings, the Franklin Steel Works has one of the largest and most modern re-rolling mills in the country, with an annual capacity of 75,000 tons. Edward E. Hughes is general manager of the company; C. F. Mackey, assistant general manager, and H. M. Hughes is manager of the pole department.

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When you get a safety suggestion from a workman, you not only get a suggestion but you know that you have a man that is boosting.

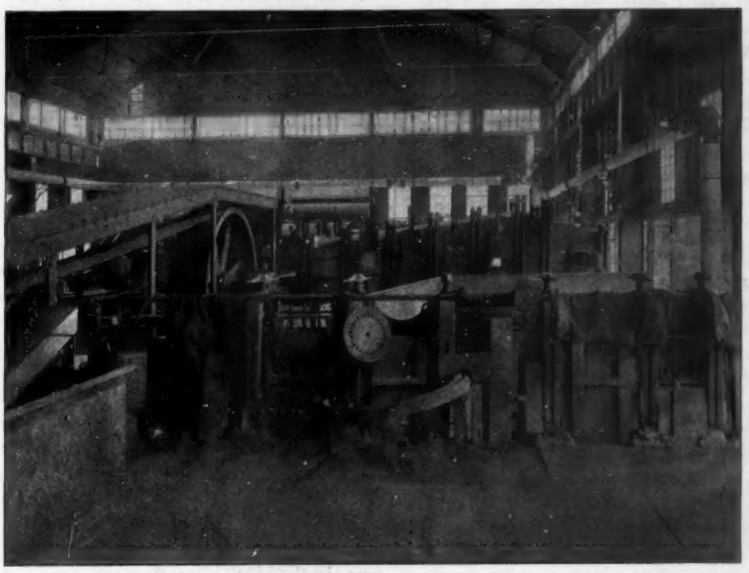

FIG. 7—NINE-INCH MILL AND ROPE DRIVE

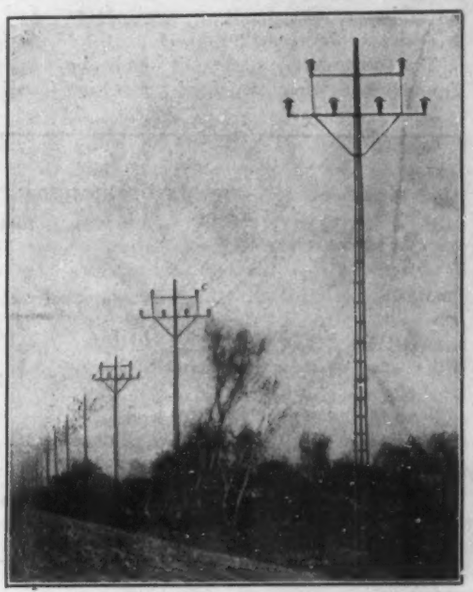

FIG. 8—TRIPARTITE STEEL TRANSMISSION POLE

## Vacation Allowance and Pension System

*By E. C. Kreutzberg*

J. H. Williams & Co., manufacturers of drop forgings, with plants at Brooklyn and Buffalo, N. Y., on July 1, put into effect a complete and general welfare plan for the benefit of their employes, numbering 1,000 or more. This plan embraces three separate systems, providing for pension and life insurance payments and for vacation allowances, which will remunerate the workmen for time lost on account of the week each year during which the company expects to close its plants. In conjunction with the workmen's compensation law, recently enacted in New York state, and the J. H. Williams & Co. Mutual Aid Association, which makes specified payments during periods of sickness out of a fund contributed to equally by the men and the company, these new systems protect the men and their dependents against cessation of wages from practically all causes outside of the control of the man himself.

All the employes who have been with the company for three or more years are eligible to benefits under the life insurance system. Those who have a record of continuous service from three to ten years, are insured for one-half year's earnings, while those who have served ten years or more are insured to the amount of a full year's earnings. The rules governing this life insurance system specifically designate the beneficiaries, but the particular employe, when circumstances warrant, is permitted to decide how the payments shall be made.

The pension system is open to any employe at the age of 65 years who has been in the employ of the company for 25 consecutive years, or, in the case of those in the forge and other departments where the work is unusually severe, at 60 years, after 20 years of continuous service. The amount of pension is computed by multiplying 1 per cent of the average annual pay during the preceding 10 years by the number of years the man has served the company. This system, however, establishes $15 as a minimum and $100 as a maximum monthly pension.

The vacation allowance system is

(*Continued on page* 504b)

# Repeated Remelting of Copper

## Results of Tests Made on Virgin and Remelted Copper at National Cash Register Co. Plant

BY F O CLEMENTS

THE ultimate aim of the non-ferrous metal founder is a high grade product and a diminished scrap pile. Many considerations enter into the production of sound castings. In addition to the melting temperature, the degree of fluidity of the melted metal itself, at a given temperature, exerts probably the most decided influence upon the successful outcome of a difficult job. Alloys made in regular practice, are frequently over-heated, and in some cases burnt. This is done usually from a desire to increase fluidity.

The customary statement made by foundrymen that repeated remelting of metal, very decidedly injures the casting properties, would be granted, without question, by every practical foundryman. It seemed advisable, however, to devise a series of tests which would quantitatively measure the soundness of castings, and thereby give some comparison as to the relative amount of oxygen and other impurities absorbed during the melting process.

In considering the various type of physical testing apparatus, the fiber stress or endurance machine developed by Messrs. Upton & Lewis, of Cornell university, seemed to most accurately predict the casting conditions. At least the fiber strength revealed on the Upton-Lewis machine has very close correlation to the casting properties. Oxidation makes sluggish metal and consequent poor fibre —sluggish metal will not properly fill the mold—an effect still further mechanically affecting the strength of the product. This particular machine produces alternate bends on quickly made test specimens 1 inch wide and of any given thickness, making graphic record of the number of bends and the resistance the part offers to the load prior to fracture.

This machine, as originally designed, offered resistance through spring action. This has been modified in the National Cash Register Co.'s laboratories, so that pendulum resistance has been substituted for the springs, permitting loading somewhat in accordance with the sectional area of the test bar itself.

After the completion of the physical tests on the virgin copper as purchased, 100 pounds of the metal was melted under exact foundry conditions and brought to a satisfactory casting temperature. This temperature proved to be, in heat No. 1, 1120 degrees Cent. Regular foundry practice was followed in every particular, the metal being kept well covered with charcoal to prevent undue oxidation. This metal was cast into good appearing ingots, which proved very solid throughout. Four samples were machined from a random ingot and tested for toughness of fiber. The metal, at the same time, was analyzed. The metal was then all reassembled and again remelted at the same temperature as reported heretofore. The second heat resulted in solid ingots, a slight bulge appearing on the top of each.

The third heat seemed sluggish and the temperature of the metal was raised to 1165 degrees Cent. The ingots had a bad exterior, containing blow holes to the depth of one inch. The metal was very spongy and unreliable.

In the fourth heat, the metal recovered from the various operations was again remelted and cast at a temperature of 1115 degrees Cent. The ingots were very spongy and full of blow holes; in fact, the metal was so unreliable that it was almost impossible to machine test bars that gave any indication whatsoever of good features. The breaks showed discolorations and badly oxidized spots.

The data obtained from the chemical and physical tests is to be found in the accompanying table.

The question naturally arises, can a metal in such injured condition be de-oxidized and restored to its former condition? Every foundryman recognizes the advantages derived from fluxes. The use of fluxes or the benefits to be obtained therefrom to our knowledge have never been quantitatively determined.

The last two sets of figures included in the table shows very conclusively the value of Boron suboxide as a flux. Following the directions of the General Electric Co., two ounces of Boron suboxide were added to 16 pounds of the badly injured metal. The copper was heated to 1260 degrees Cent., in order to secure the best results from this particular flux. The metal was then allowed to cool down to a casting temperature of 1149 degrees Cent., and again cast into ingot form. The ingots had a good appearance, were solid, and the fiber seemed remarkably close, as is evidenced by the results obtained on the endurance machine. The diagrams produced were slightly irregular, but considerably longer than all others, including the virgin copper.

EFFECT OF REMELTING ON COPPER

**Physical Data.**

| | Virgin metal. | First heat. | Second heat. | Third heat. | Fourth heat. | Boron sub-oxide. | Sample of Boronized copper cast under ideal conditions. |
|---|---|---|---|---|---|---|---|
| Average No. alternate bends | 1,515 | 850 | 845 | 762 | 334 | 2,007 | 3,044 |
| Resistance offered in bending, assuming virgin metal at 100 per cent..... | 100 | 97 | 96 | 96 | 96 | 103 | 117.5 |
| Percentage of drop-off of resistance in 10-in. lengths. | 2.7 | 5.5 | 4.9 | 8.5 | 22.6 | 2.7 | 0.74 |

**Chemical Data.**

| | | | | | | |
|---|---|---|---|---|---|---|
| Copper, per cent..... | 99.78 | 99.59 | 99.49 | 99.43 | 99.39 | 99.56 |
| Lead, per cent..... | None | Trace | Trace | Trace | Trace | Trace |
| Sulphur, per cent..... | 0.03 | 0.06 | 0.08 | 0.11 | 0.13 | 0.08 |

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To provide increased facilities for its growing business, the Duluth office of the H. W. John-Manville Co. has been removed to larger quarters at 327 West First street. These headquarters provide a large display room and the various products manufactured by this company, including asbestos roofing, pipe coverings, packings, sanitary specialties, etc., will be carried in stock.

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Portions of a paper presented at the annual meeting of the American Institute of Metals, Chicago, Sept. 7-11, 1914. The author is connected with the National Cash Register Co., Dayton, O.

# Are Aiming to Promote Safety

## Boiler Manufacturers Discuss Important Changes in Specifications—Hold Convention Without Entertainment—W E Connelly, of Cleveland, Elected President

AT the 26th annual meeting of the American Boiler Manufacturers' Association, held Sept. 1-4, at the Waldorf-Astoria hotel, New York City, discussion centered chiefly upon the very important work now being accomplished by the state of Massachusetts and the American Society of Mechanical Engineers in raising the standards of boiler design and construction and in promoting safety.

A prominent feature of this convention was the lack of social distractions, which, at previous meetings had been complained of as interfering considerably with attendance at the business sessions. This new policy was inaugurated as the result of an agreement between the Boiler Manufacturers' Association and the Supply Men's Association. In the future, in order that the former organization may be unhampered in transacting its business, the supply men will provide no entertainment features.

### *President Meier Resigns*

President E. D. Meier was not in attendance at the meeting, being detained at his home by reason of ill health. In his stead, T. M. Rees, first vice president presided over the convention. In a letter to the convention, Col. Meier tendered his resignation, stating that he would no longer be able to bear the burdens attendant upon his office. His resignation was accepted with regret, a committee being appointed which drew up resolutions expressing appreciation of Col. Meier's work during the six years he occupied the presidency. The new president is W. E. Connelly, of Cleveland, who long has been an enthusiastic worker in the association. The other officers remain as follows: Secretary, J. D. Farasey, Cleveland; treasurer, Jos. F. Wangler, St. Louis; first vice president, T. M. Rees, Pittsburgh; second vice president, J. Don Smith, Charleston, S. C.; third vice president, H. D. MacKinnon, Bay City, Mich.; fourth vice president, L. E. Connelly, Cleveland, and fifth vice president Rob. Joy, Oswego, N. Y. An executive committee was appointed which will meet at Buffalo sometime within the next 60 or 90 days to discuss methods of promoting the growth and efficiency of the organization, and to decide upon a place for the next meeting.

John A. Stevens, of Lowell, Mass., formerly a member of the Massachusetts board of boiler rules, and now a member of the committee appointed by the American Society of Mechanical Engineers to formulate a code of standard boiler specifications, described the work which this committee has in hand. The proposed standard which the committee has prepared, said Mr. Stevens, is based largely on the present Massachusetts standard, and also on suggestions made by leading power engineers throughout the world, some 1,600 individuals in all having been consulted. Mr. Stevens admitted that the enforcement of the proposed standard would necessitate from 10 to 15 per cent more cost in manufacturing a boiler. He argued, however, that considering the heavy life and property losses which often occur as the result of boiler explosions, this additional cost, in view of the consequent decreased liability to explosions, is of negligible importance. Mr. Stevens called attention to the open meeting which the A. S. M. E. committee will hold in New York on Sept. 15, and he suggested the boiler manufacturers have a representation present.

Another speaker was Geo. A. Luck, deputy chief of the Massachusetts boiler inspection department and chairman of the board of boiler rules in that state. He read a list of changes which the Massachusetts board proposes to make in its boiler rules and specifications. In order not to hamper the work of the A. S. M. E. committee, he said, the board has decided not to adopt these changes until after the meeting of Sept. 15. The principal proposed change provides that boilers shall be constructed entirely of fire box steel, the use of flange steel to be eliminated entirely. The proposed standard calls for a tensile strength ranging from 52,000 to 63,000 pounds per square inch, but makes no change in the chemical and physical properties required. Another important change provides that steel headers, instead of cast iron headers, shall be used on all water tube boilers, which are subjected to a working pressure of more than 15 pounds per square inch; also that rolled or cast steel must be used in all boilers in which the working pressure is more than 15 pounds per square inch. Provision is included that only locomotive boilers may be equipped with domes or drums; these are to be placed on the barrel of the boiler and shall be constructed of steel, of the same thickness and having the same properties as the steel in the boiler itself.

There was considerable discussion among the members of the association as to the physical properties which attend various tensile strengths. J. O. Leach, of the Carnegie Steel Co., said that his experience proves steel having a low tensile strength, providing it has the requisite qualities, is as suitable for boiler construction as steel having a high tensile strength. Wm. H. Boehm expressed himself in favor of a tensile strength no greater than 60,000 pounds per square inch, saying that he feared brittleness when the tensile strength was above this limit. T. M. Rees was in favor of the use of steel having a high tensile strength, providing the quality also was there. He said he could not remember any failures of boilers in which such material was used. The general opinion appeared to be that the essential requirement in boiler steel is good quality, and that a high is more to be desired than a low tensile strength. In reply to a query by Rob. Joy, Mr. Leach stated that the steel companies are willing to work within any tensile strength limits specified but that they prefer working within a range of 8,000 pounds, since working within smaller limits necessitates the scrapping of considerable tonnage, and thus greatly increases the cost of producing the material. W. H. S. Bateman said he considered 10,000 pounds, a good leeway when working on fire box steel and that this limit is the one customarily worked to by the different steel companies.

### *Uniform Specifications*

The committee on uniform specifications reported several proposed changes in the specifications recommended by the A. S. M. E. boiler specifications committee, and this report was adopted and will be submitted for the attention of the A. S. M. E. committee. The association also appointed a committee consisting of Chairman, L. E. Connelly, Cleveland; A. J. Schaff, Pittsburgh and Bartholomew Scannel, East Boston. This committee will represent the Boiler Manufacturers' Association at the meeting of Sept. 15.

W. C. Connelly, Cleveland, read the

*(Continued on page 493.)*

# Mining Institute Holds Meeting

## Association of Lake Superior District Mining Leaders Convenes at Ishpeming and Later Visits Points of Interest in Detroit

A NOVELTY in the line of entertainment was introduced last week by the Marquette range members who acted as hosts to the Lake Superior Mining Institute. In place of the customary practice of visiting the neighboring mines, the Institute members were taken on a trip to Detroit and afforded an opportunity of witnessing the processes of manufacturing the ores which they mine, into highly finished lines of iron, steel and copper. The experiment proved to be a success in every particular. One result was that the business sessions were more interesting and better attended.

The great interest taken by all mining operators of the Michigan and Minnesota ranges in the "Safety First" movement was never exemplified more clearly than at Ishpeming, Mich., on Monday, Aug. 31, when 72 miners representing the leading mining companies of both Michigan and Minnesota competed in a general first-aid meet. The accompanying illustrations show the high degree of efficiency and skill attained by these miners in rendering first-aid to the injured and at the same time reveal the close interest taken by the large number of spectators in attendance.

This first-aid meet was the opening feature provided by the entertainment committee for the first day of the convention. Practically all the members were taken in automobiles from the headquarters at Ishpeming to Union Park and their close attention was held for two hours while the 12 teams engaged in competition.

The teams entered included those from the Lake, Gwinn, Maas and Negaunee mines of the Cleveland-Cliffs Iron Co.; the Gogebic and Marquette teams of the Oliver Iron Mining Co.; Mesabi and Menominee teams of Pickands, Mather & Co.; Mesabi and Marquette teams of the Republic Iron & Steel Co.; Gogebic team, Newport Mining Co., and Marquette team, Breitung Iron Co. The 12 teams lined up in order before the grand stand and with one of their number acting as the patient, demonstrated the correct method of treating such injuries as a dislocation of the left shoulder, fracture of the collar bone, compound fracture of the right thigh and a broken back.

The judges of the contest were Dr. A. F. Knoefel, vice president of the Vandalia Coal Co., Linton, Ind.; R. Y. Williams, director of the Illinois Miners' and Mechanics' Institute, Urbana, Ill., and G. H. Hawes, rescue engineer, Pittsburgh. C. S. Stevenson, of the Cleveland-Cliffs Iron Co., acted as announcer, W. M. Webb, safety inspector, Gilbert, Minn., was timekeeper.

First prize was won by the Marquette range team of the Republic Iron & Steel Co., and second prize went to the Negaunee team of the Cleveland-Cliffs Iron Co. Three teams were tied for third place, including the Marquette range team of the Oliver Iron Mining Co., the Gogebic range team of the Newport Mining Co. and the Maas team of the Cleveland-Cliffs Iron Co. In the subsequent contest between these three teams the judges awarded third prize to the Oliver team. The high degree of efficiency shown by all the teams is shown by the fact that only six points separated the first and last teams.

Luncheon at the Wawonowin Golf club was followed by a ball game, after which the members were taken in automobiles to inspect the Athens and Negaunee mines of the Cleveland-Cliffs Iron Co. Arrangements for handling visitors had been perfected, so that no confusion was experienced in handling the 400 members present. Each member was provided with the number of the automobile in which a seat had been assigned him. The automobiles were grouped in consecutive order and every detail had been looked after so carefully that the inspection of the mines and the visits to the ore dock at Marquette were made rapidly. Automobile arrangements were in charge of C. A. Barabe and C. J. Stakel.

The Negaunee mine contains a number of new features in its surface buildings and stocking trestles. The trestles are double tracked and are of steel construction, while the permanent buildings are of unusually strong construction. The ore deposit is a large one and the company has made preparation for continuing mining operations there for a number of years. The Athens mine is still in the preliminary stages, but a number of new methods of shaft sinking are being employed, which will be described in an early issue of THE IRON TRADE REVIEW.

At Marquette, the members were taken to the new concrete ore dock of the Lake Superior & Ishpeming Railway Co. Later, they witnessed a demonstration of a new shoveling machine designed by the Lake Shore Engine Works. A banquet was held at the Lake Shore plant with genuine lake Superior white fish as the *piece de resistance.*

Monday night at the Marquette Opera House, moving pictures were shown of the mining methods pursued at the Port Henry, N. Y., mines of Witherbee, Sherman & Co. The pictures were taken under the direction of Edwin Higgins, of the United States Bureau of Mines, who briefly described the difficulty encountered in securing underground views.

Tuesday morning, the members left on a special train for St. Ignace, Mich., where they boarded a steamer for Detroit, reaching that city Wednesday morning. All of the business sessions were held on board the boat Tuesday afternoon and evening and attracted a full attendance. Discussions of the unusually interesting papers submitted were participated in more freely than has been true at earlier meetings and resulted in bringing out a number of points of value to all mining operators.

"The Use of Electricity at the Penn and Republic Mines," was described in detail in a paper prepared by William Kelly and F. H. Armstrong, Vulcan, Mich., and read at the afternoon meeting. Lucien Eaton submitted a paper on "Methods of Stocking Ore on the Marquette Range," which described in detail the methods pursued at the various mines. Other papers included: "Mining Methods on the Marquette Range," by H. T. Hulst, G. R. Jackson and W. A. Siebenthal; "Steel Stocking Trestle at No. 3 Shaft, Negaunee Mine", by S. R. Elliott; "General Outline of Mining Methods Used in the Copper Queen Mine, Bisbee, Ariz.", by Joseph Park Hodgson, and "The Sinking of a Vertical Shaft at the Palms mine of the Newport Mining Co., at Bessemer, Mich.", by Frank Blackwell; "Ventilation in the Iron Mines of the Lake Superior Districts," by Edwin Higgins, was published in full in the Sept. 3 issue of THE IRON TRADE REVIEW.

At the evening session, a paper was read on "The Electrification of the Mines of the Cleveland-Cliffs Iron Co.", prepared by F. C. Stanford. The company's electric development was described in full in THE IRON TRADE

REVIEW, July 25 and Aug. 1, 1912. "The Caving System of Mining in Lake Superior Iron Mines," was read by J. Parke Channing and "The Titaniferous Ores in the Blast Furnace—A Recent Experiment," was submitted by Dwight E. Woodbridge. This paper was published in last week's issue of THE IRON TRADE REVIEW. "The Follow-Up System and Method of Recording Injuries in Compliance With the Workmen's Compensation Law," was submitted by Herbert J. Fisher and described the method followed by the Munro Iron Mining Co., at Iron River, Mich.

*The New Officers*

L. M. Hardenburg, Ironwood, Mich., general superintendent for Pickands, Mather & Co. was elected president succeeding W. H. Johnston, general superintendent of the Oliver Iron Mining Co. on the Marquette range. G. R. Jackson, Ishpeming, and T. C. Flannigan, Duluth, were elected vice presidents for a term of two years. Henry Rowe, Ironwood, Mich., M. E. Richards, Crystal Falls, Mich., and Enoch Henderson, Houghton, Mich., were elected members of the board of managers for the two year term. E. W. Hopkins and A. J. Yungbluth were re-elected treasurer and secretary respectively in recognition of the excellent work they had performed in strengthening the Institute during the past year.

At Detroit on Wednesday, the Institute was entertained by the Board of Commerce. Representative Detroit business men boarded the steamer of Commerce building. After viewing the G. A. R. parade and attending a luncheon in the Commerce building, the members were taken on a tour of inspection of the works of the Detroit Copper & Brass Rolling Mills, the Detroit Iron & Steel Co. and the Semet-Solvay Co. Members from the "copper country" particularly were interested in the brass rolling mills, while the iron mining interests were benefited by the visits to the blast early in the morning and on landing escorted the delegates to the Board furnace and coke plants. On Thursday, inspections were made of the plants of the Ford Motor Co. and the Chalmers Motor Co.

GENERAL VIEW OF FIRST-AID MEET. NEWPORT TEAM IN FOREGROUND AND WINNING TEAM OF REPUBLIC IRON & STEEL CO. STANDING UP DIRECTLY TO THE LEFT

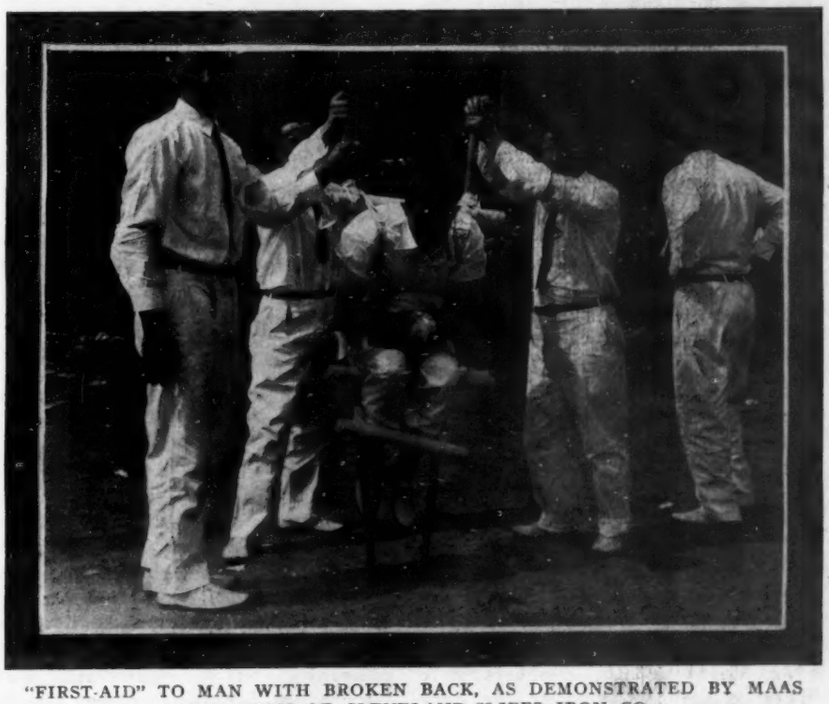
*Detroit Committee*

Oliver Phelps, of M. A. Hanna & Co., was chairman of the entertainment committee of the Detroit Board of Commerce. Other representatives of the iron and steel industry were: George H. Barbour, Michigan Stove Co.; Warren S. Blauvelt, Semet-Solvay Co.; Wayne C. Bogue, Carnegie Steel Co.; L. H. Carlisle, Cambria Steel Co.; Caleb M. East, Murphy Iron Works; William G. Henry, Detroit Stove Works; Frederick H. Holt, Jones & Laughlin Steel Co.; J. S. Hageman, Bethlehem Steel Co.; F. W. Hutchings, Lake Superior Iron & Chemical Co.; Jay C. McLauchlan, Pickands, Mather & Co.; P. J. Moran, Detroit Iron & Steel Co.; C. W. Russell, Russell Wheel & Foundry Co.; John R. Searles, Detroit Copper & Brass Rolling Mills; Joseph S. Stringham, Monarch Steel Casting Co., and James T. Whitehead, Whitehead & Kales Iron Works.

The next meeting of the Institute will be held at Ironwood, Mich., where the members will be guests of the Gogebic range mining interests.

In Mr. Blackwell's paper the following was submitted to show the

(*Continued on page* 493.)



"FIRST-AID" TO MAN WITH BROKEN BACK, AS DEMONSTRATED BY MAAS MINE TEAM OF CLEVELAND-CLIFFS IRON CO.

# Planning to Extend Commerce

## Open Letter to Secretary Redfield—Canada Will Endeavor to Capture Some of Germany's Trade—Strong Demand for Automobile Trucks for Foreign Countries

CHARLES S. POWELL, manager of the Factory Appliance Co., Cleveland, who has had valuable experience in the export trade while a representative of American interests in London and since returning to the United States, has addressed the following open letter to Secretary Redfield:

Hon. William S. Redfield, Secretary of Commerce and Labor,
Washington, D. C.

Dear Sir:

In the consideration of the subject of the extension of the export trade of the United States regardless of the new opportunities seemingly opened to us by the European war, it would seem to one who has had an extensive experience in this class of work that some very important details of advance information are being overlooked.

The questions of financial connections, transportation facilities, knowledge of the language and personal representation by intending American importers are all being freely discussed. Many plans are being formulated for the taking care of these very important matters. Granted that these problems were in a measure solved, there is still an important link in the preparation of plans for the handling of export business which, if not supplied fully and promptly, will delay considerably the extension of our foreign business and cost the American manufacturer a lot of needless expense and worry which will well-nigh discourage him in his work before it is fairly begun.

American consuls throughout the world have in a great measure been diligent and insistent in calling the attention of American manufacturers to the question of packing and handling of goods destined for foreign countries and in many instances this advice has been heeded and good results have followed.

The question of packing is, however, not one into which our consuls or other government officials can go into specific detail, and they can only advise as to conditions and hint at what is best to be done.

The question of packing and shipping of goods depends upon several varying factors among which are the following:

1. Duty charges and restrictions of the country to which the goods are shipped.

2. Method of transporting from ship to land.

3. Method and facilities for handling at the port of entry.

4. Method of handling after being unloaded.

5. Facilities of transport inland.

6. Facilities for transport en route and at destination.

7. Climate, customs and usages of the country of destination.

8. Character of the goods themselves.

A shipment of pig iron or other raw material or a similar character may not be affected by any particular requirements of packing and shipping, but wherever shipments of machinery, automobiles, stoves, hardware and like articles are concerned, it is of vital importance to both shipper and purchaser that all of the conditions laid down should not only be fully known to the shipper, but should be carefully considered by him and every precaution should be taken to see that the requirements of the purchaser and [illegible] met and carried out in every detail.

### *What Information is Needed*

The various United States consuls throughout the world have gathered together certain information in connection with the points above mentioned. This information is included in a governmental publication entitled "Hints on Packing." But something more than this is needed. What we would suggest is that definite instructions be given to the various consular agencies to supply at the earliest possible moment, reliable and complete information regarding the country or city to which they are accredited. This information should be along the following lines:

I—How are foreign goods landed at the port of destination?
- (1) By direct unloading at dock?
  - (a) By hand?
  - (b) By truck?
  - (c) By crane?
- (2) By lighterage?
  If so, what are capacities of lighters and how propelled?
- (3) By small boat?
- (4) If by any other method, mention it.

II—Is the port dock supplied with cranes?
- (1) If so, what is their capacity, with description of same?
- (2) Style of crane?
- (3) How operated?
  - (a) Steam.
  - (b) Electricity.
  - (c) Air.
  - (d) Hand.
- (4) Where made?
- (5) Who operates and owns them?
- (6) Fee, if any, for using?

III—Are there railroad facilities to the dock or landing place?
- (1) If not how are goods handled from dock to railroad?
- (2) What facilities have railroad companies for loading and unloading freight at initial station and destination?

IV—Railroad facilities.
- (1) Names of railroads.
- (2) Gage.
- (3) Motive power.
- (4) Privately or publicly owned.
- (5) Description of cars.
  - (a) Capacity by weight of freight cars.
  - (b) Dimensions.
  - (c) Where made.
  - (d) What is coupling and brake equipment?
  - (e) Are refrigerator cars available?
  - (f) Are cars covered or uncovered?
  - (g) Give photographs of types of cars.
  - (h) What limits loading of cars?
  - (i) Give maximum clearance gage.
  - (j) What are loading limitations due to tunnels?
  - (k) What are loading limitations due to bridges?
  - (l) What other loading limitations are there?
- (6) Are goods protected from weather in transit or while in store houses awaiting shipment?
- (7) How long are goods in transit from seaport to destination?
- (8) What is average freight rate from nearest seaport?
- (9) How is freight estimated?
  - (a) By weight?
  - (b) By measurement?

V—If goods are not transported inland by rail
- (1) What is largest package in weight and dimensions that can be conveniently handled?
- (2) What is the mode of transportation?

VI—Give plan of dock at harbor and photograph of landing place with details of equipment used in handling goods.

VII—What are governmental requirements regarding size and weight of packages?

If the intending exporter were supplied with this information and kept posted from time to time regarding any additional matters of interest of this nature, we feel that eventually he would arrive at a point where his knowledge of the conditions in the various countries to which he would wish to ship goods and machinery would be of such a character that the various questions of shipping, packing and customs could be intelligently handled and the satisfaction of the purchaser assured.

There are of course many other details of handling foreign business which the manufacturer must learn and must work out for himself, but we firmly believe that the government is in a position to supply the above class of information better than any other organization.

We earnestly recommend that definite

steps be taken to follow out, in a measuse at least, the above suggestions.

Very respectfully yours,

Charles S. Powell.

Cleveland, Sept. 5.

## Activity in Canada

Toronto, Sept. 7.—The movement to take advantage of the present situation caused by the war and secure a portion of the trade in iron and steel products lately supplied by Germany and other continental countries is being actively promoted by the Canadian Department of Trade and Commerce. A bulletin was recently issued to manufacturers calling attention to the opportunities offered of building up Canadian industries and giving figures showing the extent of the trade done by Germany and Austria with Britain and Canada in machinery, electrical goods, hardware and other lines. As a result a large number of manufacturers have applied to the department for more detailed information as regards the branches in which they are concerned, and the government has in preparation statements showing the trade of Germany in neutral markets which might possibly be supplied by Canadian plants. An active interest in the subject has been created which is expected shortly to act as a stimulus to many now depressed industries. The Dominion Steel Corporation is one of the foremost to appreciate the opportunity. President J. H. Plummer states that negotiations are pending with a view of receiving new business. C. S. Cameron, secretary-treasurer of the company, has sailed for England to investigate the prospects of doing business in the British markets. P. G. Donald has arrived from England as the special representative of large interests there which are desirous of securing from Canada various forms of steel products and has gone to Ottawa to confer with the government. He suggested in the course of an interview that the Canadian government might be asked to assist the export trade in steel to Britain, as had been done by the German government in the infancy of the German steel trade.

Speaking of the enormous trade with Britain now lost to the Germans, Mr. Donald said: "Who is going to have that trade for the future? We think that Canada should have it. It must be either the United States or Canada. If Canada will not, we will have to go to the United States, but we naturally want to give her the first chance."

The decision of the Canadian government on the matter of revoking all German and Austrian patents which has been for some time occupying their attention will have an important bearing on the question of industrial expansion. Last year nearly 300 Canadian patents were granted to Germans and about 40 to Austrians, which has been about the average for the last few years. Many of these have been purchased by Canadians, but a large number are still held by Germans. The greater proportion of these cover discoveries in chemistry and science and electrical devices. Should the patents be revoked, access would be given to whoever wished to the plans and specifications in the patent office and a great stimulus would be given to many lines of industry, more especially the manufacture of electrical apparatus.

## Will Discuss Embargoes

Washington, Sept. 8.—Commissioner Daniels, of the Interstate Commerce Commission, will hold a hearing in Chicago on Jan. 20 on the general subject of embargoes. The announcement has been at this early date in order that shippers and railroad interests might have ample time to prepare themselves and all who desire may be heard. Formal and informal complaints against existing embargo rules have been filed from time to time with the Commission and it was determined in consequence to make the hearing general instead of taking up individual complaints.

## Surplus of the United States

Washington, Sept. 8.—Following inquiries from American producers and manufacturers relating to possible markets abroad for their surplus products and as to the ability of the United States to supply raw materials necessary to their industries, the Bureau of Foreign and Domestic Commerce, Department of Commerce, has reported on investigations it has just completed.

It finds, through a partial inventory, that the United States is not only practically self-supporting, but that it possesses, in many lines, a large surplus available for protection against famine and temporary adversity or for use in meeting unusual demands from the outside world.

Pointing out that the pre-eminent position of the United States in the mineral kingdom is unquestioned, the Bureau reports that, for example, this country produces 534,000,000 short tons of coal, 40 per cent of the world's output and 57,000,000 tons of iron ore, out of a world total of 132,000,000. One-half of the world's copper is taken from American mines, which produced 1,250,000 pounds in 1912. In the value of manufactures the United States leads the world, though the product of American factories is chiefly consumed at home. Of $20,700,000,000 worth of manufactures made in the United States in 1909, only about 5 per cent were sold abroad, the world market for iron and steel and other products being held chiefly by European countries.

## Shipping Armored Automobiles

Washington, Sept. 8.—Reports have been received here that armored steel automobiles, for use by the European powers engaged in war, are being manufactured in Philadelphia and will be shipped as soon as completed. At the office of the solicitor of the State Department, knowledge of instruction from the State Department to the manufacturers was denied. It was claimed, nevertheless, that the department had counseled the manufacturers about giving publicity to their affairs when engaged in the sale of goods declared contraband of war by the belligerent European nations. At the same time, the alleged instructions made it plain that the department was not attempting to dictate the disposition of the output of any manufacturer. The cars are said to have been sold to nations on each side of the conflict, one order representing 14 cars for the British government

It is claimed that negotiations have also been entered into with France, Russia and Greece. A New England maker is declared to be engaged in building rapid-fire machine guns to be mounted on the armored automobiles. Those said to have been ordered by England, according to the report, will be shipped from Philadelphia to private individuals in Canada and thence reshipped to the front.

Diplomats of Russia and Greece are said to have witnessed demonstrations of the cars in New York.

Agamemnon Schliemann, Grecian minister to the United States, has placed his official signature on an order for 50 1½-ton Kissel-Kar trucks to be delivered in New York for transit to Greece the middle of September. The Kissel factory has put on an extra night force of men to fulfill its contract.

The trucks are intended for the commissary department of the Greek army.

# Business News from the Capital

## Important Amendments to the Clayton Anti-Trust Bill, Which is Now Being Considered by Conference

WASHINGTON, Sept. 8.—Administration leaders express the belief that the Clayton omnibus bill, the second and last of the anti-trust measures to be passed at this session, will be reported out of conference soon. It was submitted to conference after its passage in the Senate last Wednesday by a vote of 46 to 16. No Democrats opposed it, while seven Republicans and one Progressive voted for it.

The bill, thoroughly understood by comparatively few members of Congress, is thought by those who have followed it closely to be more severe in its present form than it was as it left the House, although relieved of some of the crudities with which it was encumbered as it left the lower body. The bill was greatly changed.

Curiously enough, some of the most drastic amendments which were adopted were offered by a member of the minority party—Senator Cummins of Iowa. Almost at the last hour of the bill in the Senate, he succeeded in having adopted an amendment which practically restores the House provision legalizing picketing. The Senate committee on judiciary had stricken out the picketing amendment, and then, with not the slightest protest, the Senate proceeded to vote favorably for the Cummins amendment. It provides that no injunction shall issue "to forbid persons from attending at any place where any such person or persons may lawfully be for the purpose of peacefully obtaining or communicating information."

Senator Cummins was also successful in having another labor amendment adopted, when section 7, the labor union exemption section, was amended by inserting at its beginning the declaration that "The labor of human beings is not a commodity or article of commerce". This section, as is known, holds that the anti-trust law shall not prevent the existence of labor unions, agricultural or horticultural organizations. In other words, they may now "legally" exist, instead of existing by "the sufferance of the Department of Justice", as Samuel Gompers, president of the American Federation of Labor, has it.

The other only important change made with respect to injunctions as they affect labor unions was in section 20. A proviso to this section was adopted by which the courts may dispense with the rule to show cause, and upon affidavit, to issue an attachment for a person charged with contempt and admit him to bail pending hearing upon the merits of the charge.

Striking out House sections 2, 3 and 4, dealing with unfair trade practices, the Senate substituted the Walsh amendment, section 4, designed to prevent the "patent monopoly", supposedly recognized by the Supreme Court in its Dick mimeograph decision. Licensing contracts are invalidated by this section, with a jail penalty and fine provided for any violation.

The House paragraph in section 7, legalizing traffic associations among common carriers, was stricken out and section 8 pertaining to the acquisition of stock by one corporation in another corporation engaged in interstate commerce, was amended and made more severe.

The Senate, rewriting the section in regard to interlock-directorates between common carriers, corporations and corporations dealing in supplies used by the common carriers, inserted language providing that there shall be no interlocking directors between such corporations and that a common carrier shall not deal with a supply company to the amount of more than $50,000 in any year except as the result of competitive bidding, the rules for which are to be prescribed by the Interstate Commerce Commission.

Perhaps the other most important and radical amendment, reported in THE IRON TRADE REVIEW last week, is that offered by Senator Reed, providing for the appointment of a receiver for a corporation declared to be a monopoly under the anti-trust laws, and for the sale of the assets of the corporation and the restoration of competitive conditions under the direction of the court.

Not until after it had been adopted did many Senators appreciate the full import of a new section added at the request of Senator Chilton. It is claimed this section is a rider. It provides that "it shall be unlawful for any corporation engaged in commerce to do any business in any state contrary to the laws of any state under which it was incorporated or contrary to the laws of the state in which it may be doing business. For the purpose of this section the District of Columbia may be deemed a state."

Under the terms of this amendment, it is held that a corporation brewing beer or distilling whiskey is forbidden by federal statute to violate the laws of any state into which it might ship its product. It has been observed this amendment would go a long way toward enforcing prohibition.

Senator Chilton succeeded in having adopted another amendment, to be added to section 9a, making it a felony for the president or other officer or director of any firm or corporation engaged in commerce as a common carrier to embezzle, etc., the moneys, funds, credits, securities, property or assets of the firm. The Chilton amendment provides that "nothing in this section shall be held to take away or impair the jurisdiction of the courts of the several states under the laws thereof, and a judgment of conviction or acquittal on the merits under the laws of any state shall be a bar to any prosecution hereunder for the same act or acts." The penalty for a violation under this section is not less than $500 fine or imprisonment for not less than one or more than ten years, or both.

The section dealing with court procedure provides that no injunction shall

### Legislative and Other Capital Activities

*House Ways and Means Committee prepares bill to raise war tax of* $100,000,000, *as suggested by President Wilson in his message to joint session of Congress.*

*War Risk Bureau is placed in operation.*

*Alexander bill to build up merchant marine to answer emergency expected to pass House this week.*

*Federal Trade Commission bill reported from conference, and expected to go to President for signing before week ends. Clayton bill in conference.*

*President issues shipping registry order.*

*River and harbor bill in Senate is attacked by Senator Burton, of Ohio.*

*Decision reached at conference between Federal Reserve Board and Clearing House Association representatives to formulate a plan for United States to meet obligations in Europe in gold, if demanded, requiring perhaps* $150,000,000.

issue between employers and employes in labor disputes unless necessary to prevent injury to property or property rights, and no such order shall prohibit the right of employes to strike or peacefully persuade others to do so. Disobedience of writs subjects offenders to contempt proceedings, the accused in indirect cases being granted trial by jury. The bill also prohibits holding companies where their effect is to lessen competition or create monopoly and makes illegal two years after the passage of the act interlocking directorates in competing corporations, any one of which has a capital of more than $1,000,000.

It was more on account of the elimination by the Senate of the price discrimination section than any other thing that the house disagreed to the bill as it passed the upper body, causing the measure to go to conference.

## Bids on Destroyers

Washington, Sept. 8.—Bids have been asked by the Navy Department for six new torpedo boat destroyers, authorized by the naval appropriation bill. Instead of twin torpedo tubes, the new boats will be equipped with triple tubes, but otherwise will generally follow the lines of boats in the preceding class. They will be 310 feet long, 29 feet 10 inches beam, and draw 9½ feet, with a displacement of 1,108 tons. Each will have a battery of four 4-inch rapid-fire guns and four triple torpedo tubes.

## The Railroad Conference

Washington, Sept. 8.—No formal arrangement has been made for a conference between railroad representatives and members of the Interstate Commerce Commission. This announcement was made to THE IRON TRADE REVIEW by Commissioner Clark, when asked if the commission was, as reported, to participate in the conference which the railroad interests and President Wilson are to hold tomorrow.

The commissioner said he understood that the railroad representatives are desirous of holding a conference with commission members at the same time they talk to the President. He added also, contrary to reports, that commissioners who are not in the city, will not be called to Washington to participate in such a conference, if one is held. In other words, it is not known at this time that the commission members will be participants of the conference. The only ones in the city besides Mr. Clark are Commissioners Clements and McChord.

It is not known definitely what the nature of the conference will be, although the railroads will, no doubt, direct the attention of the President to what they call the deplorable condition of railroad securities due to the European war and the urgent need for more revenue. A movement has been started among some bankers and manufacturing interests to get Congress to pass a joint resolution directing the commission to review and revise its decision in the 5 per cent case and grant further and more material increases in rates to the railroads. This so far has made no headway.

## Trade Commission Amendments

Washington, Sept. 8.—Two changes of more or less importance were made by the conferees in the Federal Trade Commission bill, both being insertions in Section 5.

Instead of "unfair competition", the bill now reads "unfair methods of competition". In the third paragraph, the words "and if it shall appear to the commission that a proceeding by it in respect thereof would be to the interest of the public" are inserted. Seemingly, this is to do away with "spite" complaints, this paragraph relating to orders served by the commission upon complaints alleging "unfair methods of competition" against corporations. Conferees expressed the belief that by inserting the "public interest" feature the commission may escape taking up purely personal trade disputes or "spite" complaints.

The conferees conceded that they could not give definitions to cover all unfair practices of trade, pointing out that "there is no limit to human invention and it would be an endless task".

One paragraph of the conference report says:

"The most certain method of stopping monopoly at the threshold is to prevent unfair competition. Section 5 of the bill declares unfair methods of competition to be unlawful and empowers the commission, after hearing to order discontinuance of these methods."

## Are Aiming to Promote Safety

(*Continued from page* 487.)

report of the committee on "Uniform System of Cost-Keeping." In keeping boiler shop cost accounts, he said, the committee recommended the use of methods described at the last meeting of the association. It further recommended the use of daily time cards on which records of all operations should be kept by means of a time clock system, and that the time for each operation should be charged daily to the various contracts, thus enabling the manufacturers to determine exactly what the costs are on each job which is passing through the shop. Mr. Connelly suggested that the various members of the association submit to the committee descriptions of their cost systems, in order that this information may be distributed at the next meeting of the association. A number of the members present expressed their willingness to cooperate along this line.

## Mining Institute Holds Meeting

(*Continued from page* 489.)

speed attained in sinking the Palms shaft.

The approximate time required for a 7-foot cut was as follows:

| | Hours. |
|---|---|
| Drilling | 4 |
| Hoisting tools and blasting | 1 |
| Blowing smoke | ½ |
| Lowering men and cleaning off sets | 1 |
| Trimming the sides | 1 |
| Mucking and picking bottom | 14½ |
| Placing a set | 2 |
| Lunch | ½ |
| Changing shifts | ¼ |

For extending the shaft equipment the approximate time required was as follows:

| | Hours. |
|---|---|
| To lower and place one length of air pipe | ¾ |
| To lower and place one length of 12-in. pipe | 1 |
| To lower and place one length of guide | ¾ |
| To lower and place one length of 7-in. channel | ¾ |

Concreting during sinking required two shifts to make a plank bottom and fill between three adjacent sets or 16 feet.

The speed of sinking the shaft, including the placing of steel sets and lagging, occasional concreting, etc., averaged from 4 to 4.56 feet per day during several months. For the last three weeks in August, 1913, it averaged 5 feet per day.

The speed of final concreting was from 35 to 48 feet per day. For the total distance concreted 78 gondolas of sand and 15,695 sacks or 21 carloads of cement were required. During the entire shaft sinking not a single serious accident occurred.

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The Kruse Forging Co., Inc., successor to A. Kropp & Co., has removed to 2520 South Artesian avenue, Chicago. Considerable new equipment has been placed in the plant.

# Facts About Ferro-Manganese

## Where the Manganese Ore Comes From and Where the Alloy is Made—Probable Effect of War on United States Supply

BY W W HEARNE*

THE trade in this country is not well informed in regard to the supply of ferro-manganese. Firstly, there is only one company at present that manufactures ferro-manganese on this side the Atlantic. This company has not sold any in the general market for some years, but a few months ago it was rumored that they proposed to make more than they needed and would sell in the open market. Owing to the reduction in the tariff, but more to the action of the foreign manufacturers who made prices for delivery in this country as low or lower than for their home market, this business apparently seemed unremunerative and very little was sold. This was unfortunate for the American users, because they could have held American works to their contracts while they will find it difficult to hold the foreign works which are all located in countries now at war.

There were used in the United States last year 239,496 tons of ferro-manganese and 110,338 tons of spiegeleisen. Most of the spiegeleisen was made in Pennsylvania from a manganiferous ore that is a by-product from a zinc works. About 90,000 tons were manufactured there while the remainder was made by a steel plant in Colorado and by a steel plant in Illinois for their own use in making Bessemer steel. Some of the American steel plants now are figuring on using spiegeleisen as a substitute for ferro-manganese, but they will find it very difficult because there is about as much carbon in 19 to 21 per cent spiegeleisen as in 80 per cent ferro-manganese and they will have trouble to get the proper amount of manganese in their steel without getting an excessive amount of carbon.

### *Ore Consumption in United States*

In 1913, the only maker of 80 per cent ferro-manganese in America made 119,496 tons. Figuring roughly, it would take 298,740 tons of manganese ore to make 119,496 tons of ferro-manganese.

There were used for the manufacture of flint glass about 10,000 tons of manganese ore and for the manufacture of dry batteries about 20,000 tons. There also were used for various other purposes about 1,000 tons, making in all 329,740 tons consumed in this country, last year. In the United States, 4,048 tons were produced and there were imported into the United States from all foreign countries 345,090 tons, making a total for use in this country in 1913 of 349,138 tons. This would leave apparently a surplus of 19,398 tons of ore in stock. In passing, it is well to note that the home production in 1913 was negligible and the one mine producing in a commercial way in 1913 is now closed down.

The importations of manganese ore for 1914 are not at hand except for the first five months. In the first five months of 1913, we imported 182,270 tons; in the first five months of 1914, we imported 112,622 tons of manganese ore; in other words, almost 70,000 tons less than in the same period of the previous year, so that at the present time it is idle for some people to claim there is a surplus of manganese ore in this country. We have accounted for all that was imported in 1913 except about 19,000 tons and we saw a shortage of importations this year of 70,000, so that would leave a shortage of at least 51,000 tons over the stock of manganese ore that had been brought in in 1913.

### *Imports of Ferro Manganese*

There were imported into this country from Europe in 1913 128,070 tons of ferro-manganese. It would take 320,175 tons of manganese ore to produce this tonnage. About 115,000 tons of this ferro-manganese came from England, the remainder from Germany. There have been at times importations from Austria and from Southern Russia, but of late years the amount is negligible. Any contracts with Germany may as well be crossed off, as even if their seaports were open, their works are closed by the war.

Now to go further, the United Kingdom produced in 1912 only 4,170 tons of manganese ore; so it is easy to see that it is wholly dependant on outside sources for its ore supply. Where are these supplies? The greatest production in any one year from Brazil was in 1910 when that country produced 249,954 tons, but in 1911 it produced only 171,172 tons. What it can do now is problematical. During the year 1913, the United States imported 70,200 tons of ore from Brazil. The greatest production in India was in 1910, when it produced 800,000 tons which fell in 1911 to 670,290 tons. In 1913, the United States imported 141,587 tons from India. The Russian production has been increasing; in 1910, it was 394,405 tons; in 1911, it was 572,028 tons, in 1912, 957,800 tons, and in 1913, 1,100,000 tons. In 1913, the United States imported 124,337 tons from Russia. Germany is the only country producing ferro-manganese that also is a producer of manganese ore. In 1911 its ore production was 85,921 tons. The figures for 1912 and 1913 are not available.

In 1913, Germany produced 18,949,929 tons of steel, which required about 473,748 tons of manganese ore.

Great Britain produced 7,663,876 tons of steel requiring 191,597 tons of manganese ore.

France produced 4,419,241 tons of steel requiring 110,481 tons of manganese ore.

Austria-Hungary produced 2,682,619 tons of steel requiring 67,065 tons of manganese ore.

Belgium produced about 2,000,000 tons of steel requiring 50,000 tons of manganese ore.

Russia produced 4,503,599 tons of steel requiring 112,590 tons of manganese ore.

The United States produced more than 31,000,000 tons of steel requiring about 775,000 tons of manganese ore.

In other words, the 1913 demand for manganese ore from the principal countries of the world was as follows:

| | |
|---|---|
| United States | 775,000 |
| Germany | 473,748 |
| Great Britain | 191,597 |
| France | 110,481 |
| Austria-Hungary | 67,065 |
| Belgium | 50,000 |
| Russia | 112,590 |
| Total | 1,781,481 |

Of this Germany produced for her own use about 85,000 tons and the remainder came from India, Russia and Brazil.

The amounts given above do not show the correct quantities of ore actually consumed as ore in each country, because Germany made not

*Resident partner Matthew Addy & Co. at Philadelphia.

only all she used but exported ferro-manganese made from imported ores. England actually used more manganese ore in making ferro-manganese for export than she did in making this alloy for her own consumption. Austria, Russia and France made their own ferro.

The United States is the only country that does not make its own ferro and this is rather hard to understand because as shown, all the countries making ferro-manganese draw their ore from abroad. At an earlier point, we mentioned the fact that Great Britain produced only 4,170 tons of manganese ore in 1912. The problem sifts itself down to these: How much will the war affect the production of steel? How much will it affect the production of manganese ore?

The production of steel in Germany and Austria-Hungary will not be totally suspended for the reason that the government will require enormous supplies, but all the export trade and a large part of the commercial business will be cut off. However, Germany has drawn most of its manganese ore from Russia. It will be cut off from this and it will have to depend on its stocks and her home production.

Belgium has ceased to manufacture steel, as the war is centered in its steel manufacturing district.

France produces about 6,000 to 7,000 tons of manganese ore yearly and imports the remainder. The steel manufacturing business of France must be practically suspended, as many of the plants are located in the district where the war now is going on and undoubtedly they are at present stopped and probably seriously damaged. This will cut off the use of about 634,229 tons per annum of manganese ore.

Now what will be the effect on the production of the ore? About 1,000,000 tons of the world's production or more than 50 per cent comes from Poti and Batum on the Black Sea. It is generally known in the trade as Poti ore. This ore has to pass across the Black Sea and then past Constantinople and through the Dardanelles. Any disturbance in that part of the world causes an instant suspension of shipments. There is no large single mine, but a great many small mines operated by owners of small means and the financing of this district has been largely in the hands of Germans and Greeks. The Germans, now that Germany and Russia are at war, will probably have to withdraw their support. At the time of the Russian-Japanese war, operations in this district were suspended and ferro-manganese rose to high figures. Undoubtedly there will be a great effort to increase the output of India and Brazil, but manganese ore deposits the world over are small and pockety and it remains to be seen how much can be done in starting up these small operations. Of course there are no shipments being made from Brazil at the present moment owing to the German ships off that coast. While danger of capture may not be great and even if a boat is captured, if it belongs to a neutral party, it will be returned, still this increases the war insurance and freight cost materially. When American ships commence to carry this ore, this danger will be averted, but it will undoubtedly cost much more during the coming year than formerly.

# Great Foundry and Shop Exhibit

(*Continued from page* 470.)

dles and handles the sand, being equipped with suitable elevators, hoppers, sifting devices, etc. Air and hand squeezer machines similar to those installed in the plant of the Ford Motor Co., at Detroit, were displayed together with core machines, vibrators, special flasks, etc.

The exhibit of Henry E. Pridmore, Chicago, included stripping plate and rock-over drop machines; power squeezers; plain electric driven jarring; combination electric jolt rock-over drop; electric jolt stripping plate; power ramming stripping plate; hand squeezers; plain stripping plate and power rock-over stripping machines. These machines as usual were shown in operation making molds for the visiting foundrymen. The feature of the exhibit was the combination electric jolt and power rock-over drop machine, which was described in THE IRON TRADE REVIEW, Sept. 3, 1914. This machine is built in several sizes, the one shown at the International Ampitheatre having sufficient capacity for handling molds weighing up to one ton. The machine performs all of the operations in connection with making molds and utilizes both electric and pneumatic power.

An important machine of a new type combining jar ramming, roll-over and a pattern-drawing operation was displayed by the Arcade Mfg. Co., Freeport, Ill. Simplicity was one of the aims of the designer of this machine. It has but two cylinders and one valve controlling all movements. Standard squeezer machines also were displayed with extension frames which enable them to straddle wide sand heaps. In addition, the Arcade Mfg. Co. exhibited brake shoe machines, piston machines, Norcross jarring machines in various sizes, squeezers, core roll-over machines, midget core jolters, sand sifters, etc.

### *Combination Machines*

Further examples of the prevailing tendency toward combination machines was found in the exhibit of the Buch Foundry Equipment Co., Bridgeport, Conn. A combination twin jar, squeeze and roll-over machine operated by electricity was displayed. It has two jolt platforms which operate under a single squeezer head thus making it possible to mold both cope and drag at the same time. The squeezing operations may be performed either by hand or pneumatically and on the smaller machines the jolting mechanism is operated by a hand lever working in conjunction with a special spring arrangement. Rectangular and round tapered aluminum snap flasks, bottom plates, pattern frames and boards, adjustable steel flask bars, ladles, etc., also were included in the Buch display.

The International Molding Machine Co., Chicago, showed air and electric jarring machines, combination jar ramming turn-over draw machines, power turn-over, power draft machines, stripping plate machines, stationary and portable power squeezers, combination jolt squeezers and core machines. A combination turn-over draw and jar ramming machine, similar to the one described in THE IRON TRADE REVIEW, Aug. 27, was displayed. In this machine compressed air is used exclusively. One of these machines recently was installed in a heating apparatus foundry where it is used for molding 38-inch round sections. The output is said to be 35 flasks in four hours using three men; when the same pattern was molded on the floor, three molders put up only 24 flasks in a whole day. Core molding machines of various designs constituted one of the important features of the International exhibit.

An automatic machine for molding stove plate and similar classes of work was displayed by Wm. Demmler & Bros., Kewanee, Ill. It includes sand elevating and handling apparatus, together with the flask carrier and automatic rammers operated by cams. The Hewlett-Demmler core machine also

was exhibited. This machine was described in *The Foundry*, March, 1912.

Plain jolt machines, combination jolt and squeezer machines and jolt roll-over direct draw machines were displayed by the Federal Foundry Supply Co., Cleveland. The roll over operation on the latter machine is performed by hand which simplifies the mechanism. The jolt cylinders are of valveless type, and are used for drawing the pattern. Dearsly stripping molding machines and three part combination machines specially designed for intricate automobile and agricultural work were displayed by S. Freeman & Sons Mfg. Co., Racine, Wis.

A tremendous jar-ram molding machine with independent roll-over and pattern-drawing device was shown by the Herman Pneumatic Machine Co., Zelienople, Pa. This machine is designed specially for handling exceptionally large molds and a crane is provided for transferring the flasks to and from the table. The general features of the machine are well known and need no extended description. In addition the Herman company displayed jar-ram strippers, plain bumpers, combination jarring and hand stripping machines.

Grimes jolt roll-over molding machines and plain roll-over machines were displayed by the Midland Machine Co., Detroit.

An exceedingly interesting model showing a full sized vertical cross section of a pneumatic jolt ramming machine in operation was displayed by the Mumford Molding Machine Co., Chicago. This model was elevated so that it was visible from all parts of the arena. The valve was painted red and its action was very clearly delineated. Mumford jolt rammers are now manufactured with a pattern drawing device which was exhibited and in addition, electric jolt rammers, high trunnion plain power squeezer, combination jolt and squeezer and combination jolt and split pattern vibrator machines were shown.

The Osborn Mfg. Co., Cleveland, exhibited plain jolt machines; direct draw roll-over machines with and without jolting attachments; squeezers, both plain and combination; rock-over jolt, power draft machines, etc. The hand operated, direct draw roll-over machines which were on exhibition were similar to those used in the Ford Motor Co.'s plant for molding cylinders as described in *The Foundry*, September, 1914.

The Tabor line was well represented with power squeezers, combination jar-ram squeezers, split pattern machines and combination squeezer and roll-over machines. A molding machine also was displayed by the Speeder Molding Machine Co., Rockford, Ill.

### *Core Machines*

Practically all of the molding machine manufacturers mentioned above showed more core-making machines of various standard types and in addition the Brown Specialty Machinery Co., Chicago, displayed its Hammer core machines which are designed to make round, square and irregularly shaped cores continuously. Core cutting off and tapering machines also were shown by the Brown company. The S. Obermayer Co., Chicago, showed a core jarring machine of interesting design.

### *Melting Equipment*

The exhibits of melting equipment were confined mostly to furnaces for brass and other non-ferrous metals. A particularly complete display of apparatus of this character was presented by the Monarch Engineering & Mfg. Co., Baltimore. It included a new oil-fired, reverberatory refining furnace of the tilting type designed to handle 1,700-pound charges. A twin tilting furnace for melting brass, etc., also was displayed. The two melting chambers of this furnace are mounted in tandem on a single base and the flame enters at the one end. In this way a melting heat is maintained in one chamber and a pre-heating temperature in the other. When the charge in the melting chamber is ready to pour, the direction of the flame is reversed and the preheating chamber becomes the melting chamber. The Monarch company also displayed stationary melting furnaces, ladle heaters, kerosene and fuel oil torches and core ovens.

The Whiting Foundry Equipment Co., Harvey, Ill., showed drawings of a new type of cupola designed especially for large heats of long duration. This cupola is provided with individual blast boxes instead of the usual wind belt around the tuyeres. Chas. J. Clark, Chicago, displayed the Clark blast meter which measures the volume of air entering the cupola or air furnace.

### *Monorail Exhibit*

An unusually interesting exhibit of apparatus for handling materials was made by the Coburn Trolley Track Mfg. Co., Holyoke, Mass. Two different types of overhead monorails were shown together with a large number of motion pictures illustrating their application. The two types of monorails included the regulation I-beam form and a special rolled section which was shaped so that the load is suspended between the trolley wheels. Interesting types of switches, turntables, etc., for monorails were shown.

### *Cranes and Hoists*

A five-ton, two motor electric crane trolley was shown in operation by the Whiting Foundry Equipment Co., Harvey, Ill. This trolley was driven by three-phase, 60-cycle, 220-volt current. The Cowan Truck Co., Holyoke, Mass., showed a storage battery truck provided with a lifting platform which enables it to pick up its load from the floor.

A complete overhead trolley system including main and divergent tracks, switches, etc., and a foundry crane mounted on a runway were shown by the Curtis Pneumatic Machinery Co., St. Louis. This concern also exhibited an interesting balanced pressure air hoist in operation.

The Hayward Co., New York, showed a motor driven clam shell bucket in operation over a sand heap. This type is particularly adapted for cleaning up large foundry floors and handling sand to and from storage bins. Air hoists and trolleys were displayed by the Vulcan Engineering Sales Co., Chicago.

Several types of electric hoists for foundry service were shown by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., including a 3-ton cage controlled monorail hoist specially suitable for transferring castings, sand, etc., from one department to another, a 1-ton floor controlled high lift hoist, a 1-ton floor controlled alternating current hoist, a 5-ton traveling crane trolley and a back geared motor provided with a winch head. The latter device can be used for hauling core trucks and smaller work where hand labor usually is employed.

### *Cleaning Room Equipment*

Rapid advances have been made during the past year in the design of cleaning room equipment particularly sand blast apparatus. Completely automatic, continuous, self contained sand blast plants are now offered by a number of manufacturers and where large quantities of comparatively small castings are to be handled these machines eliminate nearly all of the labor in the cleaning room.

The W. W. Sly Mfg. Co., Cleveland, showed a new double-acting sand blast machine in operation. It is provided with an oscillating table on which the work is placed and is so arranged that the castings may be passed as many times under the cleaning nozzles as may be necessary for a thorough job. Both ends of the oscillat-

ing table project from the machine and the castings may be loaded and unloaded from either end. In addition the Sly company showed an automatic rotary sand blast table machine, sand blast barrels, tumbling mills, dust arresters, etc., in operation. Duplex shakers driven both by air and electricity and electric Simplex shakers were shown by the Brown Specialty Machinery Co., Chicago.

The Central Iron Works, Quincy, Ill., exhibited photographs and drawings of improved tumbling mills, water cinder mills, dust arresters, sand separators, sand blast machines and other cleaning room and core equipment. The Curtis Pneumatic Machinery Co., St. Louis, Mo., displayed two types of sand blast apparatus and also two types of air compressors. The Knickerbocker Co., Jackson, Mich., displayed Morse rarefied dust collectors. Cleaning room equipment also was shown by the Macleod Co., Cincinnati, the Mott Sand Blast Mfg. Co., Chicago, and the Pangborn Corporation, Hagerstown, Md.

### *Sand Handling Apparatus*

The displays of sand handling and mixing machinery included principally machines of well known types. It is evident, however, that the demand for sand handling equipment of an elaborate character is growing, and several manufacturers displayed combination machines such as core sand mixers with riddling attachments and combined sand cutting, riddling and elevating machines. Interesting displays of sand handling and mixing apparatus were made by the Blystone Mfg. Co., Cambridge Springs, Pa., Keller Pneumatic Tool Co., Fond du Lac, Wis., Sand Mixing Machine Co., New York, and Vulcan Engineering Sales Co., Chicago.

### *Welding*

In the exhibits of oxy-acetylene welding apparatus standard types of generating machines, torches and auxiliary paraphernalia were displayed. Demonstrations of welding and cutting were given throughout the week. Evidence of the growing importance of electric arc welding in the foundry field was found in two displays of arc welding machines by the General Electric Co., Schenectady, N. Y., and the Western Electric & Mfg. Co., Pittsburgh. The exhibitors of oxy-acetylene welding apparatus included the Oxweld Acetylene Co., Chicago, and the Prest-O-Lite Co., Indianapolis. Thermit welding was displayed by the Goldschmidt Thermit Co., New York.

### *Pig Iron and Coke*

More than 225 samples of pig iron of varying analyses were displayed by Rogers, Brown & Co., Cincinnati. This comprises one of the most complete array of samples of this kind ever collected. Pickands, Brown & Co., Chicago, exhibited a model of the Panama canal made of Solvay coke and built to scale. A handsome map of the world showing Panama canal routes was distributed as a souvenir.

Air compressors and pneumatic appliances were displayed by the following: International Electric Tool Co., Milwaukee; Chicago Pneumatic Tool Co., Chicago; Cleveland Pneumatic Tool Co., Cleveland; Independent Pneumatic Tool Co., Chicago; Sullivan Machinery Co., Chicago, and Curtis Pneumatic Machinery Co., St. Louis, Mo.

### *Molding and Core Sands*

Molding and core sands were exhibited by the following: F. A. Downerd, Columbus, O.; Garden City Sand Co., Chicago; Janesville Wisconsin Molding Sand Co., Janesville, Wis.; The Newport Sand Bank Co., Newport, Ky.; The Peerless Parting Co., Ottawa, Ill. and H. S. Vrooman, Chicago.

Exhibits of foundry supplies including core oils, core compounds, facings, partings, riddles, small tools, etc., were made by the S. Obermayer Co., Chicago; Buckeye Products Co., Cincinnati; Cataract Refining & Mfg. Co., Buffalo; Henion & Hubbell, Chicago; Hill Brunner Foundry Supply Co., Cincinnati; Hill & Griffith Co., Cincinnati; J. S. McCormick, Pittsburgh; J. W. Paxson Co., Philadelphia; Robeson Process Co., Pennington, N. J.; U. S. Graphite Co., Saginaw, Mich.; Great Western Mfg. Co., Leavenworth, Kans.; Sterling Wheelbarrow Co., Milwaukee; Frederick B. Stevens, Detroit; T. B. Woods Sons Co., Chambersburg, Pa.; Wyoming Shovel Co., Wyoming, Pa.; Cleveland Wire Spring Co., Cleveland, and E. J. Woodison Co., Detroit.

The displays of metal and alloys indicated that the tendency to use prepared ingots is growing among brass foundrymen, it being possible today to obtain ingots of reliable composition. Displays of metals and alloys were made by the following: Ajax Metal Co., Philadelphia; S. Birkenstein & Sons, Chicago; Goldschmidt Thermit Co., New York; Great Western Smelting & Refining Co., Chicago; Benjamin Harris & Co., Chicago; Titanium Alloy Mfg. Co., Niagara Falls, N. Y., and Vanadium Alloys Steel Co., Chicago.

A great variety of semi-steel castings including automobile cylinders, gears, piston rings, etc., made with mixtures containing from 10 to 50 per cent steel were shown by McLain's System, Milwaukee. Laboratory service was exhibited by the Chas. C. Kawin Co., Chicago.

The Carborundum Co., Niagara Falls, N. Y., and the Norton Co., Worcester, Mass., displayed an extensive line of refractory materials. Crucibles for foundry use were exhibited by the Jos. Dixon Crucible Co., Jersey City, N. J.

Creosoted wood blocks for foundry flooring purposes were exhibited by the Ayer & Lord Tie Co., Chicago, and the Jennison Wright Co., Toledo, O. Molders' shoes, goggles, helmets and other personal equipment for protecting workmen from injury were exhibited by the C. W. Johnson Co., Natick, Mass., Julius King Optical Co., Chicago; Wm. Horstmann Co., Philadelphia; R. P. Smith & Sons Co., Chicago; F. A. Hardy & Co., Chicago.

Data regarding electric furnaces was presented by the Metallurgic Engineering Co., Chicago.

### *Machine Tool Displays*

Turning now from the foundry to the machine shop, there were a large number of displays of machine tools which amply illustrated the progress of the past year in the design and construction of metal-working machinery. In spite of the increases in the strength and power of machine tools in the past few years, it is evident that customers are not yet wholly satisfied in this direction. The demand for higher speeds and greater cutting ability is apparently as insistent as ever, but the demonstrations at the show made it plain that the machines now on the market have sufficient power to crumple any grade of tool steel without stalling.

The principal improvements of the past year in standard lathes, shapers, drill presses and milling machines include refinements in methods of motor drive, a simplification of the feed and speed change mechanism and advances in the direction of better finished tools and more handy arrangements for the convenience of the operator. The development of the turret lathe into a manufacturing machine with a wide range of possibilities was vividly illustrated by the displays on the convention floor. Also the adaptation of the gang drill to a multitude of operations ordinarily performed on a chucking lathe was illustrated. The displays of grinding machines demonstrated that the capacity of these tools at the present stage of their development is governed only by the limitations of abrasive materials.

Increased speeds have necessitated greater attention than ever to the bearings on machine tools and the

ball and roller types are supplanting plain bearings in a great many cases. An Avery drill running 10,000 revolutions per minute, equipped with ball bearings furnished by the Chicago Pulley & Shafting Co., was displayed. The Cincinnati Bickford Tool Co., Cincinnati, exhibited a very interesting heavy duty, high speed radial drill which has sufficient capacity to drive a 3-inch Celfor drill 127 revolutions per minute with a feed 0.024 inch per revolution through cast iron. The cutting speed is 100 feet per minute. A drill press of the compound table type was shown by the Colburn Machine Tool Co., Franklin, Pa.

Among the other machine tool exhibitors were the following: Acme Machine Tool Co., Cincinnati; American Tool Works, Cincinnati; Armstrong-Blum Mfg. Co., Chicago; Baker Bros., Toledo; Barber-Colman Co., Rockford, Ill.; Barnes Drill Co., Rockford, Ill.; Benjamin Electric Mfg. Co., Chicago; Chas. H. Besly & Co., Chicago; Brown & Sharpe Mfg. Co., Providence, R. I.; Cincinnati Milling Machine Co., Cincinnati; Cincinnati Planer Co., Cincinnati; James Clark Jr. Electric Co., Louisville, Ky.; G. T. Eames Co., Kalamazoo; Diamond Machine Co., Providence, R. I.; Edgemont Machine Co., Dayton, O.; E. L. Essley Machinery Co., Chicago; Gardner Machine Co., Beloit; Garvin Machine Co., New York; Gould & Eberhardt, Newark, N. J.; Gisholt Machine Co., Madison, Wis.; Graver-Klusman Tool Co., Cincinnati; Heald Machinery Co., Worcester, Mass.; International Machine Tool Co., Indianapolis; Landis Machine Co., Waynesboro, Pa.; La Salle Machine & Tool Co., La Salle, Ill.; Lodge & Shipley Machine Tool Co., Cincinnati; Marshall & Huschart Machinery Co., Chicago; Manufacturers Equipment Co., Chicago; Monarch Machine Co., Sidney, O.; National Machinery Co., Tiffin, O.; E. O. Partridge, Chicago; Reeves Pulley Co., Columbus, O.; Rockford Drilling Machine Co., Rockford, Ill.; Rock Island Mfg. Co., Rock Island, Ill.; S. K. F. Ball Bearing Co., New York; Skinner Chuck Co., New Britain, Conn.; R. R. Street & Co., Chicago; U. S. Electric Tool Co., Cincinnati; J. D. Wallace, Chicago; Warner & Swasey Co., Cleveland, O.; Weaver Mfg. Co., Springfield, Ill.; Wilmarth & Morman Co., Grand Rapids, Mich.

*Miscellaneous Exhibits*

Among the miscellaneous exhibits were the following: Canada Carbide Sales Co., carbide; Chicago Steel Foundry Co., steel castings, flasks and wire rope sockets; Felt & Tarrant Mfg Co., Chicago, adding machines; Flexible Steel Lacing Co., belt lacing; David Lupton's Sons Co., Philadelphia, sash and sash operating devices; J. R. Long & Co., Akron, O., vises, pipe reamers and cutters; Mahr Mfg. Co., Minneapolis, portable torches; Metals Coating Co., Chicago, paint spraying equipment; Puro Sanitary Drinking Fountain Co., Haydenville, Mass., drinking fountains, and the Lehon Co., Chicago, roofing.

## No Meeting

**Of Iron and Steel Institute—Sympathy for President Greiner**

Birmingham, Eng., Sept. 1. — The council of the Iron and Steel Institute has issued a circular stating that the Comite des Forges de France has been obliged to cancel all arrangements for an autumn meeting of the Institute in France this year, and that the council has decided that it would be advisable to postpone for the present the organization of any alternative arrangements for the reading and discussion of papers. A number of papers had been submitted for the Paris meeting and the council proposed to print advance copies of these for publication and discussion by correspondents. It is hoped they will be ready for issue about the second week in September, and the papers and correspondence will be published in the next number of the *Journal*. A meeting for the discharge of formal business may be held later in the year.

The circular concludes; "The council cannot let this occasion pass without placing on record an expression of their most sincere sympathy which they are sure will be shared by all members with their president, Mr. Adolphe Greiner, and his family, under which they are at present suffering in common with his countrymen at whose hands the Institute experienced such kindly hospitality in the autumn of last year."

## Will Erect German Cranes

Interest has been shown among crane manufacturers in this country as to whether the German builders will be able, in view of war conditions, to fulfill the contract for furnishing two 250-ton floating cranes for the Panama canal, which was awarded them some months ago by the government. The Deutsche Maschinenfabrik, of Duissburg, Germany, through its representatives, Neumeyer & Dimond, 82 Beaver street, New York City, advises that this contract will not be interrupted, as all the parts have arrived and it is expected that the cranes will be installed completely by Nov. 1.

**Reports Good Business.**—The C. & G. Cooper Co., engine builder, Mt. Vernon, O., reports a good business for August in the steam and gas engine departments. Among orders received is one from the Medina Gas & Fuel Co. for a 950-brake horsepower twin tandem gas engine driven compressor, to be installed in the Mansfield, O., station. This will be the third Cooper unit in the plant. The Ohio Fuel Supply Co. has also ordered three compressors, to be installed in its Perrysville, O., plant.

## Col. Bope's Address

Col. H. P. Bope, vice president and general manager of sales, the Carnegie Steel Co., will tell about Pittsburgh's export trade possibilities at the September meeting of the Pittsburgh Foundrymen's Association, Sept. 14, at the Fort Pitt hotel. Delegates to the convention of the American Foundrymen's Association at Chicago, will report briefly.

Members of a joint committee to build up South American trade for Pittsburgh industries have been named by Mayor Joseph G. Armstrong, as follows: E. V. Babcock, D. P. Black and Col. H. P. Bope; by the Pittsburgh Industrial Development Commission, J. Rogers Flannery, F. F. Nicola and W. C. Coffin; by council, Enoch Rauh, Dr. J. P. Kerr and Robert Garland; by the Chamber of Commerce, Lee S. Smith, Marion G. Bryce and E. M. Herr.

## Ore Shipments

Ore shipments from Lake Superior ports in August were as follows:

| Port. | August, 1913. | August, 1914. |
|---|---|---|
| Escanaba | 964,288 | 724,951 |
| Marquette | 598,861 | 368,430 |
| Ashland | 809,597 | 662,951 |
| Superior | 1,519,109 | 1,886,418 |
| Duluth | 1,957,239 | 1,203,081 |
| Two Harbors | 1,835,191 | 1,023,646 |
| | 7,684,285 | 5,869,477 |
| 1914 decrease | | 1,814,808 |

| Port. | To Sept. 1, 1913. | To Sept. 1, 1914. |
|---|---|---|
| Escanaba | 3,623,632 | 2,465,692 |
| Marquette | 2,155,363 | 1,049,791 |
| Ashland | 3,073,628 | 2,079,776 |
| Superior | 8,592,522 | 7,576,831 |
| Duluth | 7,891,903 | 4,152,367 |
| Two Harbors | 6,676,708 | 3,953,650 |
| | 32,013,756 | 21,278,107 |

**Appointed Agent.**—The Hendey Machine Co., Torrington, Conn., manufacturer of cone and geared head engine lathes and milling machines, the latter in both plain and universal type, as well as Lincoln type; also shapers, has placed its account in the hands of the Laughlin-Barney Machinery Co., Union Bank building, Pittsburgh, for the exclusive sale of all the above equipment in the Pittsburgh territory.

# TIPS FOR NEW BUSINESS

**Equipment needs of the Iron and Steel works, Machine shops, Foundries and other Metal Working plants**

In New York, the machinery market is as dull as it has been at any time during the last few years. This condition is attributed chiefly to the unsettling influence of the war in Europe and the resulting disturbance of the financial situation here. Users of machinery who for a number of months past have bought as little as possible, now give the war as a reason for retrenching more rigorously than ever. As a result, there is a scarcity of small-lot business. There are no important transactions to report. The only pending business of importance embraces the lists recently submitted by the Chesapeake & Ohio and the Seaboard Air Line. Bids have gone in on these lists and the trade now is awaiting announcements of awards, but no definite assurances have been received as to when these will be made. The Erie railroad has bought a few tools which, however, involve only a small outlay. The city of Detroit has circulated specifications in this market for machinery for a complete garbage reduction plant. These specifications include two cranes, some machine tools and a quantity of special machinery on which bids will be received up until Sept. 20. The Manual Training High School at New Rochelle, N. Y., is inquiring for a small quantity of foundry equipment. The only new development in the export machine tool situation is that exporters have been advised by their connections in Italy and Spain, that shipments now may be made with safety to those countries. Shipments to all European countries, however, are being made very cautiously. It is considered likely that before long an avenue into Germany will be opened up through Rotterdam. American representatives of German machinery houses state that they now are able to get into communication regularly with their home offices, via Rotterdam. From present indications, it is likely that the war may be the means of developing a fair business in Spain for American manufacturers. A Spanish engineer, who is designing a large foundry to be erected in that country, has asked for bids on the complete equipment. Numerous inquiries also are being received from Spanish dealers on the ordinary run of machine tools which they secured formerly from Germany.

In Pittsburgh, the machine tool trade remains at a standstill as a result of the European war, and there is no immediate prospect for a change in the situation. Several large orders, placed a month ago, are being held up because of the uncertain financial situation. Several manufacturers in this district have received contracts for equipment for the Boston warehouse of the Carnegie Steel Co., and the Bollinger-Andrews Construction Co. is in the market for additional equipment for its new plant at Josephine, Pa.

Machine tool sellers in Chicago have found no change in conditions the past week. Dullness which has marked practically the entire year is unchanged. One dealer made a careful canvass of railway purchasing agents and its result indicated that no railroad line is in the market for any material this fall. Some dealers indicate that the demand for second-hand machinery forms a larger percentage of their business just now than usually is the case. This is taken to indicate that shops in need of further equipment are seeking to supply themselves at the least possible cost. The city of Chicago is about to erect a machine shop; the contract having been let recently for the structure itself and it is expected some machine tools will be necessary to complete its equipment. Tools already in use at the Twenty-second street shop will be removed to the new building and will form the nucleus of that equipment. It is impossible to say that any one line is buying more tool equipment than another, the machines being sold going to industries here and there and for varied purposes.

In Cincinnati, the machine tool business is no better, although there are encouraging reports from the surrounding territory. A few export orders have been received since the outbreak of the European war. These, however, add little encouragement to the situation, as a large part of the business done by Cincinnati machine tool manufacturers is with foreign countries, and this has decreased at least one-half since the beginning of hostilities. None of the plants is running at capacity and a number have closed down indefinitely because of lack of orders. The month of August showed a considerable decrease in business in comparison with July, but the former month is usually one of the dullest of the year. Foundries are running at about 35 per cent of capacity. Wood-working machinery has fallen off because of the lack of export orders, and it is claimed that domestic business instead of increasing has also fallen off, because plants in this country are operating below capacity and do not need machinery. Laundry and sugar machinery manufacturers are busy on old orders, the latter having received some good contracts from South America earlier in the year.

## EASTERN STATES

BANGOR, ME.—John R. Graham, Bangor, president of the Bangor Railway & Electric Co., and others are considering an electric railway from Shawmut to Skowhegan, for which a charter exists and a partial survey has been made.

HALLOWELL, ME. — Marston Brooks, Salem, Mass., shoe manufacturer, will occupy a brick structure at Academy and Water streets within the next three months; a new heating plant will be installed.

KITTERY, ME.—United States Sickle Bar Co. has been incorporated to make machinery tools, etc.; $600,000; by Horace Mitchell, H. A. Paul, et al.

ATHOL, MASS. — Athol Pump Co. will

erect an addition to its plant at once.

BOSTON.—United States Oxygen Co. has a permit for a brick manufacturing factory building to be erected at 221 Orleans street, East Boston.

CHARLESTOWN, MASS. — Commercial Brewing Co. has a permit for the erection of a brick pump house.

MILFORD, MASS.—Draper Co. will erect a building to replace the one recently sold.

SALEM, MASS.—Col. John E. Spencer is negotiating for a site in Canal street, on which he plans to erect a machine shop.

WATERTOWN, MASS. — Commanding officer of the Watertown arsenal will receive bids until Sept. 24 for the purchase of one Norwalk single air compressor, 20 x 24-inch cylinder; six 2-inch stop valves and pipes attached to air compressor; one oil reservoir for air compressor; two pressure gages for air compressor; included in the air compressor are the throttle valve, also rate valve attached to the exhaust pipe, and full equipment of pipe for cooling with delivery pipe connections.

WORCESTER, MASS. — Graton & Knight Mfg. Co., maker of leather belts, will erect two structures; one will be 110 x 226 feet, 1-story, and the other 60 x 226 feet, 2 stories; building will begin this fall.

WINSTED, CONN.—Lamb Mfg. Co., Inc., newly organized to make automobile accessories, has leased half of B. J. Harrison Son Co.'s factory, and will begin operations about Oct. 1.

BUFFALO, N. Y.—Henesey-Mann Structural Co. has been incorporated; $10 000; by M. F. Mann, F. H. and E. J. Henesey.

BUFFALO, N. Y. — Luman Porcelain Metalware Co.; capital, $20,000; will erect a large factory at Kensington; Wm. C. Luman, Cambridge, Mass.; is one of the officers.

NEW YORK.—Steel Cabinet Co. has been incorporated; $5,000; by S. Burger, R. and M. Kamenstein, 57 West 112th street.

NEW YORK.—Kahn Textile Co. has been incorporated; $100,000; by David S. Yankauer, W. Valet, J. Kahn, 315 Edgecomb avenue.

NEW YORK.—Central Consumers Ice Mfg. Co. has been incorporated; $250,000; by Lawrence N. Sanders, 2 Rector street, et al.

NEW YORK.—Afco Mfg. Co., mercantile, has been incorporated; $5,000; by S. Schoen, B. I. Ross, A. Frank, 71 Nassau street.

NEW YORK.—Oxy Acetylene Welding & Machine Co. has been incorporated; $15,000; by E. S. Tully, F. Becker, W. Dougherty Jr., 357 East 180th street.

NEW YORK. — Manufacturers Agency & Sales Co., hardware, railroad and steamship supplies, groceries, textiles, has been incorporated; $60,000; by E. Diesener, P. C. Pettit, F. Paul, 32 Union Square.

POUGHKEEPSIE, N. Y.—S. L. S. Electric Co. has been incorporated; $30,000; by J. B. Ball, A. M. Sherer, A. Bolognesy, Highland, N. Y.

TOMPKINSVILLE, N. Y.—Lighthouse inspector will receive bids until Sept. 25 for the purchase of 34 lots of various condemned supplies; lot 26 covers some 200,000 pounds of scrap iron and lot 27 covers about 20,000 pounds of scrap metal.

WHITE PLAINS, N. Y.—Hausen Neiter Safety Co., machinery, mechanical devices, has been incorporated; $10,000; by J. McLaren, S. V. Dowling, F. B. Knowlton, 154 Nassau street, New York.

BEAVER FALLS, PA. — Crichton Curl Enamel Co. has increased its capital from $25,000 to $50,000.

ELLWOOD CITY, PA.—State waterways commission has approved plans for the span of the new county bridge from this city to Hazeldell, it will be of steel, 32 x 180 feet; County Commissioner Corl says that they will be ready for bids in a couple of weeks.

LANCASTER, PA.—Royal Crow Mfg. Co., fire extinguishers, has been incorporated; $5,000; by John W. Ault, et al.

PHILADELPHIA.—Concrete Socket Mfg. Co. has been incorporated; $5,000; by Fred J. Geiger, et al.

PHILADELPHIA. — United States Rubber & Tire Co. will receive bids for its 2-story, 45 x 110-foot, brick factory building.

PHILADELPHIA. — Industrial Tape Mills Co. is receiving revised estimates on its 3-story, 73 x 223-foot factory building to be erected at Allegheny avenue and Rosehill street.

PITTSBURGH.—Penn Smokeless Coal Co. has been incorporated; $5,000; by R. T. Rossell, R. C. McHugh, et al.

PITTSBURGH.—Insulation Products Co. has been incorporated; $5,000; by B. H. Thompson, Oakmont, Pa.; E. D. Bell, G. W. Newmyer.

SHARON, PA.—Petroleum Iron Works has increased its capital from $750,000 to $1,000,000.

BLOOMFIELD, N. J.—Fire did $2,500 damage to the Westinghouse Lamp Co.'s plant.

CAMDEN, N. J.—Victor Talking Machine Co. has revised plans completed for its $300,000, 6-story, brick and concrete factory addition.

JERSEY CITY, N. J. — Empire Paper Bottle Co. has been incorporated; $100,300; by Addison A. Cardwell, W. F. Davenport, S. J. Bechler.

MONTCLAIR, N. J.—Montclair Realty & Construction Co. has been incorporated; $100,000; by Meindert Boon, Anna Schootsenberg, Edward E. Murdeck.

NEWARK, N. J.—Bonnell Motor Co. has been incorporated; $50,000; by Jacob W. Mason, Horace A. Bonnell, Anna M. Bonnell.

NEWARK, N. J.—S. & H. Starter Co., starters for automobiles, has been incorporated; $40,000; by William M. Golden, Brooklyn, N. Y.; W. A. L. Whitmer and J. W. Whitmer, both of Newark; J. W. Shinholser, New York.

BALTIMORE.—City Baking Co. will soon make additions and alterations to its plant.

BALTIMORE.—Bids will close Sept. 15 for a bridge at Hanover street costing about $1,000,000. It was to be a steel draw consisting of a bascule with a clear span between fenders of not less than 150 feet and a clear roadway of 50 feet. The engineer is H. G. Sherley, 601 Garrett building, Baltimore.

WASHINGTON, D. C.—Oscar Vogt, architect, has plans completed for a $30,000, 4-story, brick and concrete bottling works.

WASHINGTON, D. C.—General purchasing officer, Panama canal, will receive bids until Sept. 21 for furnishing and erecting structural steel at the Christobel coaling plant and wharf structure.

WASHINGTON, D. C.—Bureau of yards and docks, navy department, will open bids Sept. 26 for four 15-ton locomotive cranes, three for the yard at Philadelphia and one at Charleston, S. C.

## Equipment News Tersely Told

*BELOW will be found the most important new business items of the week boiled down for the busy reader. They are culled from a great mass of less important information for your benefit. Even if your time is limited, look over this list every week.*

*Green Foundry & Furnace Works, Des Moines, Ia., has completed plans for a large plant to be erected on a 4-acre site in East Des Moines. There will be a two-story, 66 x 200-foot steel and concrete main building; one-story, 90 x 265-foot steel and concrete foundry and machine shop, and a two-story, 40 x 120-foot warehouse; it is expected to start work on the building before July 1, 1915.*

*Southern Automobile & Supply Co., St. Bernard, La., will erect seven factory buildings, at a cost of $700,000. R. Sidney Hernandez is the architect.*

*Ford-Whitehurst Mfg. Co., mill work, will rebuild its plant recently destroyed by fire; equipment will be needed.*

*Bluff City Knitting Mill Co., Bluff City, Tenn., will require motors and knitting equipment for its new plant, the buildings of which are now being completed.*

*Walter E. Hunt and L. J. Martin, who have purchased a water franchise at Providence, Ky., have organized the Providence Water & Utilities Co. and will equip a plant at the cost of $75,000.*

*Laswell & Burgher Bros., Hannibal, Mo., have the contract for the erection of the Lennox foundry, to be 100 x 433 feet, to be constructed of brick, concrete and steel.*

*Col. John E. Spencer, Salem, Mass., is negotiating for a site in Canal street, on which he plans to erect a machine shop.*

*Huber-Anderson Mfg. Co., St. Paul and Minneapolis, will locate a factory at Willmar, Minn., for the manufacture of "Little Oak" tractors. J. F. Anderson is president.*

*Joseph T. Ryerson & Son, C. R. Gregg, machinery department, Chicago, are in the market for a second-hand power squaring shear, 7 feet to 8 feet between housings, ½-inch capacity housings with 36-inch throat.*

## CENTRAL STATES

AKRON, O.—Thermo Can Co. has been incorporated; $160,000; by W. A. Hohenadt, Ford Hancock, A. B. Hoster.

BELLEVUE, O. — County commissioners will receive bids until Sept. 19 for the J. W. Worst bridge over Raccoon creek, and the O. H. Thomas bridge across Green creek.

BEREA, O.—Dunham Co.'s foundry, destroyed by fire, will be replaced by a fireproof structure.

BRYAN, O.—Ohio Art Co. has started a $30,000 addition to its plant, which will quadruple the site of its present factory; it will

be fireproof, of reinforced concrete and steel, metal window frames and sashes.

CLEVELAND.—Acme Nail & Supply Co. has been incorporated; $10,000; by C. J. Robinson, Phil J. Plunkett, Ben Krickham, John O'Brien, W. O. Wheelock.

CLEVELAND.—Cleveland Aluminum Casting Co. has been incorporated; $10,000; by J. W. Lovell, G. F. Newton, H. O. Yoder, Jane Scott, N. G. Scherer.

CLEVELAND.—James L. Stewart, Illuminating building, has the contract for the East Ohio Gas Co.'s 6-story, 116 x 166-foot office building.

CLEVELAND.—It is estimated the cost of the boat terminals for the C. & B. and D. & C. Navigation companies will reach $500,000; the office building will be of Spanish style of architecture.

CLEVELAND. — Tyroler Realty Co. has been organized with a capital of $150,000, and has taken over the lease on the Stearn building, 420 Euclid avenue; it will raze the present building and erect a new one.

COLUMBUS, O.—Welsbach Co., Philadelphia, is likely to erect a plant in this city, to make gas mantles and lamps.

DAYTON, O. — National Recording Lock Co. has been incorporated; $50,000; by George L. Baker, Stanley M. Krohn, Edward E. Burkhart, Edward T. Hall, Jacob A. Oswald.

DAYTON, O.—DeLeon-Miller Co., maker of machinery, has been incorporated; $10,000; by Carlos DeLeon, R. M. Miller, H. M. Miller, Margaret DeLeon, Elizabeth E. Miller.

FOSTORIA, O.—J. B. Everett, Marion, O., is trying to secure capital for the construction of an interurban line from Toledo to Columbus via Findlay, Forest, Marion and Delaware; it is reported Chicago capitalists offer $800,000 of the $1,000,000 necessary for the project.

GALION, O. — American Metallic Grave Vault Co. has awarded to C. J. Baker the contract for a large addition to its plant.

LORAIN, O.—Paul Rissman, has opened bids for a 48 x 52-foot cold storage plant for a company about to be organized with a capital of $25,000.

LORAIN, O.—Local capital is pushing an enterprise known as the Safety & Savings Appliance Co.; capital, $50,000; W. E. Knight, president; J. H. Pradden, vice president; the appliance is the invention of W. J. Kennedy, Grand Rapids, Mich.

MIDDLETOWN, O.—Talbert Bros., of the West Elkton Buggy Co., seek to purchase property on Clark street, for a factory site.

MIDDLETOWN, O.—Colin-Gardner Paper Co. has a permit for the erection of a rotary house; it will also erect a concrete garage and the new power house that will be built, will be equipped with automatic stokers.

NEW LEXINGTON, O.—Clyde M. Foraker, county auditor, will open bids Sept. 28, for building the superstructure of the Jonathan creek bridge; certified check, $300, required.

NEW PHILADELPHIA, O. — Survey is being made for a trolley line between Millersburg and Canal Dover.

NEW PHILADELPHIA, O.—R. H. Nussdorfer, county auditor, will open bids Sept. 14, for a creosoted block floor for the Blicktown river bridge in Goshen township; certified check, $200, required.

NORWALK, O. — Board of commissioners will receive bids until 10:30 a. m., Sept. 15 for the construction and repair of several bridges.

PIQUA, O.—Commissioners have agreed to the construction of a creosoted block floor on the East Fish street bridge.

SANDUSKY, O.—The $200,000 bond issue for a municipal lighting plant has passed the council and will be submitted to the voters at the regular election in November.

SANDUSKY, O.—H. M. Adams, county auditor, will open bids Sept. 21, for the construction of bridge P-228 over the Marshall road in Perkins township; certified check, $120, required; estimated cost, $1,233.

YOUNGSTOWN, O.—Heller Bros. have the contract for the erection of the Concrete Steel Co.'s 100 x 200-foot novelty shop.

YOUNGSTOWN, O.—Youngstown Tool & Supply Co. has been incorporated; $3,000; by J. W. Wagstaff, G. D. Bessamen, O. R. Jones, H. C. Campbell, E. B. Williams.

CHARLESTON, W. VA. — Ohio Valley Enameling Co., enameled steel signs, etc., has been incorporated; $25,000; by L. H. Cammack, Huntington, W. Va.; J. R. Burt, P. E. Burt, M. J. Burt and A. M. Burt, West Lafayette, O.

WAYNE, W. VA.—Glass Brick Co., of Cincinnati, O., has been incorporated to manufacture glass-faced brick in Wayne county, W. Va.; $600,000; by Philemon B. Stanlery, Cincinnati, O.; Floyd S. Richards, Kenova, W. Va.; J. T. Crutchfield, J. W. Spessard, G. A. Poteet, all of Huntington, W. Va.

WHEELING, W. VA.—Wheeling Steel & Iron Co. will add a furnace to its plant.

BEATTYVILLE, KY.—City will sell an electric light franchise and a local company is being organized to purchase it and operate a plant; address mayor.

HODGENVILLE, KY.—City has decided to issue $14,300 bonds for the establishment of a water system; date for awarding machinery contracts will be set shortly.

HOPKINSVILLE, KY. — Business Men's association reports that it has information regarding the establishment of a foundry by Indiana interests.

LOUISVILLE, KY.—C. Miller & Sons will purchase a motor-driven grain- handling equipment for a new elevator which has been started; a freight elevator will also be installed.

LOUISVILLE, KY.—Louisville Casket Co. has been incorporated; $75,000; by Martin Kaelin, Jacob Schreick, Louis Stoke.

LOUISVILLE, KY.—Louisville & Nashville Railroad Co. will need equipment for shops and a roundhouse at Lexington, Ky.; buildings contracts have been let.

LOUISVILLE, KY.—Axton-Fisher Tobacco Co. will need a deep-well pump, in addition to boilers, engine and generator and motors, previously noted.

INDIANAPOLIS, IND.—American Paper Stock Co., paper manufacturer, has been incorporated; $10,000; by Fred S. Coffman, Joseph M. Gospodarck, Felix J. Rehor.

INDIANAPOLIS, IND. — Board of commissioners will receive bids until Sept. 22 (change of date from Aug. 25) for the construction of the West New York street bridge over White river; appropriation for bridge, $150,000.

MADISON, IND.—Madison Light & Railway Co. will install new boilers, engine and generator in its power house; it was recently given permission by the state public service commission to issue bonds for this purpose.

TELL CITY, IND. — Southwestern Furniture Co. has plans completed for its 4-story, 65 x 90-foot addition.

VEEDERSBURG, IND.—Smith Lock Vice Co., to make mechanical devices, has been incorporated; $25,000; by E. W. Finch, E. W. Kirk, O. W. McGaughey.

AURORA, ILL.—Geneva Foundry & Machine Co. has purchased two lots, upon which an office building will be erected either this fall or next spring.

CHICAGO.—International Harvester Co. of New Jersey, 606 South Michigan avenue, has a permit for an $18,000 factory.

CHICAGO. — Houck Mfg. Co., maker of wire automobile wheels, has leased the 3-story building at 2339 South Michigan avenue.

CHICAGO.—Juvenile Vehicle Mfg. Co., has increased its capital from $10,000 to $25,000; office is at 3401 South Hoyne avenue.

CHICAGO.—Carman Mfg. Co. has been incorporated to manufacture automobile parts, $2,500; by Edward L. Archibald, Richard V. Megary, 4616 North Lincoln avenue and Chas. R. Brown, 29 South LaSalle street.

CHICAGO.—Joseph T. Ryerson & Son, C. R. Gregg, machinery department, are in the market for a second-hand power squaring shear, 7 to 8 feet between housings, one-half inch capacity housings with 36-inch throat.

EDWARDSVILLE, ILL.—American Standard Automobile Co. has been incorporated to manufacture machinery, planters, motors, automobile parts and accessories; $100,000; by Peter Burnhardt, Chas. H. Gerling and Louis Kirsch.

PEORIA, ILL.—The National Electric & Auto Supply Co. has been incorporated to manufacture electric telephone motor boat automobile and air craft supplies and accessories; $75,000; by Ralph V. Miller, Theodore E. Bass and H. H. Moody.

BAY CITY, MICH. — Local banks have made it possible to raise $50,000 to bring the Fulton Mfg. Co.'s plant to this city from Chicago; plans will be prepared for a 150 x 275-foot building.

DETROIT.—Eastern United Machine Co. has increased its capital from $5,000 to $25,000.

DETROIT. — Department of public works will receive bids until 10 a. m., Sept. 21 for machinery and other equipment for a garbage-disposal plant.

DETROIT.—Detroit Steel Products Co. will erect a $7,500, 80 x 80-foot, brick and concrete factory building on East Grand Boulevard.

DETROIT.—Ambrose Beard & Son have leased the premises at 51-55 East Woodbridge street, and will use the lower floors as an iron and steel warehouse and the upper floors for light manufacturing purposes.

DETROIT.—James Black Masonry & Construction Co., St. Louis, Mo., has the general contract for a store building for David Scott, Grand and Warren avenues, 10 stories, 122 x 90 and 99 x 57 feet, of brick, terra cotta and steel.

FLINT, MICH.—A permit has been issued for the new Buick enamel plant, to cost $100,000; it will be 108 x 350 feet, 2 stories, and will be equipped with modern machinery.

LAPEER, MICH.—City Clerk J. H. Bidwell is advertising for bids for new bridges on Mason and Fox streets, and for the rebuilding of the Saginaw street bridge; plans on file at his office.

MENOMINEE, MICH. — Work has begun on the construction of the Menominee Electric Mfg. Co.'s two additions, one of which will be used as a shipping room and the other as a brass foundry.

SAGINAW, MICH.—Werner & Pfleiderer, makers of bakers' machinery, etc., have plans about completed for a 100 x 140-foot, brick, steel and concrete foundry, to be about four stories high, although there will be but one story; it will be equipped with a traveling crane, a mono-rail carrier, and an electric elevator; factory and office buildings will follow next year.

BELOIT, WIS.—Great Northern Mfg. Co. will erect a large factory at Rockton, Wis., to manufacture slot machines.

EAU CLAIR, WIS.—It is reported that the Drummond Packing Co. plans to double the capacity of its plant; estimated cost, $80,000.

LADYSMITH, WIS. — A. Knudsen, Waupaca, Wis., has the general contract for a $60,000 high school building to be erected in this city; manual training equipment will be purchased as work progresses.

MANITOWOC, WIS.—Aluminum Specialty

Co. is having plans made for a $20,000, 1 and 2-story, 60 x 200-foot, steel and brick factory building; the power plant will contain a 100-horsepower boiler and heat will be supplied by the vapor system.

MARINETTE, WIS.—Derreck & Hubert are preparing plans for a $60,000 manual training institute for the city of Menominee; it will be 48 x 200 feet, with a 68 x 80-foot wing, brick, 3 stories; bids will be taken after Sept. 1.

MARSHFIELD, WIS.—Felker Mfg. Co., sheet metal and galvanized iron work, is considering the erection of a factory.

MILWAUKEE. — Treater-Forgel Electric Co. has been incorporated; $10,000; by H. F. Trester, W. R. Sorgel, E. Walters, O. W. Kreutzer.

MILWAUKEE. — Charles H. Tharinger, architect, is preparing plans for a $25,000, fireproof warehouse; owner's name withheld; freight and passenger elevators will be required.

MILWAUKEE.—Chicago, Racine & Milwaukee boat line is receiving bids for its $100,000, 112 x 300-foot steel and brick warehouse and merchandise dock; to be erected in this city; Schnetzky & Son, architects.

MILWAUKEE.—A new bascule bridge at Grand avenue and the removal of the present bascule to Huron street is recommended by J. C. Pinney, superintendent of bridges and public buildings; a new bascule at Cherry street within two years is also recommended; Fred G. Simmons, commissioner of public works.

OCONOMOWAC, WIS. — Common council has voted to build an intake in Lac LaBelle and install a 12-inch main from that point to the 200-acre site purchased by the Pacific Coast Condensed Milk Co., Seattle, Wash., for its proposed dairying plant, to cost between $75,000 and $100,000; Hugo A. Ernst, mayor.

OWEN, WIS.—International Canning Machinery Co. has been incorporated; $250,000; by E. J. Vaudreuil, W. C. Tufts, G. E. Anderson.

RACINE, WIS.—Badger Gas Appliance Co. has been incorporated; $10,000; by Victor Hanson, H. J. Rassmussen, J. J. Foley.

RACINE, WIS.—Chicago, Racine & Milwaukee boat line will erect a warehouse and dock here similar to the $100,000 warehouse and dock planned for Milwaukee.

SHEBOYGAN, WIS. — Sheboygan Fibre Furniture Co. will erect a 40 x 140-foot factory at this place; Otto A. Mueller, president.

WATERTOWN, WIS.—Otto Biefeld & Co., maker of all kinds of machinery, has started to erect a fireproof shop.

WEST BEND, WIS.—West Bend Aluminum Co. will add a 40 x 75-foot building, for the shipping and stock departments, to its new plant, just completed.

BELLEVILLE, MO. — McKinley Tractor Co., maker of gasoline plows, will locate in Belleville; a 10-acre site has been donated, and over $25,000 has been subscribed by local capitalists.

HANNIBAL, MO. — Laswell & Burgher Bros. have the contract for the erection of the Lennox foundry, to be 100 x 433 feet, brick, concrete and steel.

KANSAS CITY, MO.—Ream Metal Bridging Mfg. Co. has been incorporated; $30,000; by Fred H. Ream, Frank H. Dorris, P. Beiler.

KANSAS CITY, MO.—Burdet Mfg. Co. has been incorporated; $75,000; by M. C. Tomlinson, C. S. VanNoy, J. T. M. Johnston.

ST. LOUIS.—Therma Automatic Stave Co. has been incorporated; $10,000; by Charle DeVoto, J. E. Graves, J. H. Kohlmeyer.

ST. LOUIS.—Pinch Bar & All Machinery Co. has started the erection of its $10,000 factory in East St. Louis.

ST. LOUIS, MO.—Loheide Mfg. Co. has increased its capital from $30,000 to $50,000.

ST. LOUIS.—Thermo Automatic Stove Co. has been incorporated; $10,000; by A. H. Kohlmayer, Charles De Voto, J. E. Graves.

ST. LOUIS.—Mechanical Novelty & Mfg. Co. has increased its capital from $5,000 to $20,000.

ST. LOUIS.—Groover Engine Co., manufacturer, has been incorporated; $2,000; by George L. Middleton, Fred W. Morgan, et al.

ST. LOUIS.—Southern Wheel Co. will erect a $60,000 building of steel construction in Atlanta, Ga.; it will manufacture cast iron car wheels, with a daily capacity of about 300.

ST. LOUIS.—American Thermometer Co., manufacturer, has been incorporated; $100,000; by Charles D. Bolin, Charles Weisenfels, Paul U. Farley.

ST. LOUIS.—Burchwell Mfg. Co., to make and deal in machinery, etc., has been incorporated; $10,000; by L. H. Ferrell, William M. White.

ST. LOUIS.—St. Louis Screw Co. has begun the construction of its rolling mills on a 11½-acre site; plans include the erection of steel-construction buildings 80 x 396 feet, 140 x 216 feet, 80 x 210 feet, with a 34 x 106-foot coal pulverizer and 30 x 40-foot transformer buildings; following the construction of mill buildings, it will erect a bolt and nut plant, screw plant, general warehouse and office buildings; it will obtain electric power from the Union Electric Light & Power Co.; operate 600-horsepower mill motors at 2,200 and smaller motors at 440 volts; motor-generator set for direct current; equipment will include coal crushing and pulverizing plant of 8-ton hourly capacity and complete system of cranes and mono-rail hoists.

CHARITON, IA. — Chariton foundry was destroyed and the Donelson & Threlkeld spring bolster factory was badly damaged by fire.

CRESTON, IA.—J. K. Lonegran has reached a satisfactory agreement with Mr. Brennan and is asking the assistance of the Business Men's club in order that he might open up the Patrick Brennan foundry on South Elm street.

EAST DES MOINES, IA.—Green Foundry & Furnace Works has completed plans for a large plant to be erected on a 4-acre site in East Des Moines; there will be a 2-story, 66 x 200-foot, steel and concrete main building, a 1-story, 90 x 265-foot, steel and concrete foundry and machine shop and a 2-story, 40 x 120-foot warehouse; it is expected to start work on the buildings before July 1, 1915.

WILLMAR, MINN.—Huber-Anderson Mfg. Co., St. Paul and Minneapolis; capital, $500,000; will locate a factory at this place for the manufacture of "Little Oak" tractors; J. F. Anderson, president.

## SOUTHERN STATES

EAGLE ROCK, VA.—Eagle Rock Milling & Mfg. Co. has been incorporated; $25,000; by E. M. Stull, J. W. Stull, Bessemer, Va.

RICHMOND, VA. — Ford-Whitehurst Mfg. Co., mill work, will rebuild its plant destroyed by fire;; equipment will be needed.

SOUTH BOSTON, VA. — Halifax Cotton Mills has purchased the New Century Cotton Mills, and has been incorporated; $100,000; by N. B. McCanless, W. A. McCanless, both of Salisbury, N. C.

BRANCHVILLE, S. C.—City votes Sept. 22 on $10,000 electric light plant bonds; address mayor.

FLORENCE, S. C.—Alderman Motor Co. has been incorporated; $10,000; by D. W. Alderman, R. J. Bland.

SUMTER, S. C.—Sumter Motor Co. has been incorporated; $10,000; by J. H. McCollum, R. J. Bland.

ROCK MART, GA.—City voted Aug. 6 for $5,000 for the enlargement of the municipal light plant.

JACKSONVILLE, FLA. — Ocala Iron Works, 60 x 100-foot building is nearing completion; 24 machines will be installed, consisting of lathes, planers, drill presses, shapers, etc.

PABLO BEACH, FLA.—City voted $10,000 to construct a municipal light plant.

FAUNSDALE, ALA.—Marengo Cotton Oil Co. has been incorporated; $7,500; by John H. Minge, Henry Fipps, Rosa Minge.

HATTIESBURG, MISS.—Hattiesburg Wood Reduction Co. will install $25,000 worth of additional machinery in its refining department.

VICKSBURG, MISS.—Bids will be received until Sept. 21 for the city waterworks and filters; plans include the following: 1,000,000-gallon coagulating basin, 3,000,000-gallon filter, 500,000-gallon clearwater basin, pumping station, pump pit and intake tower, 132 tons of 4-inch, 1,290 tons 6-inch, 450 tons 8-inch, 180 tons 10-inch, 643 tons 12-inch, 700 tons 16-inch, and 10 tons 20-inch cast-iron pipe; 55 tons 10 to 20-inch flanged cast-iron pipe, and five tons flanged special castings; 253 fire hydrants, three horizontal water-tube boilers, 200-horsepower high-pressure pumps of combined steam turbine and centrifugal pump units, horizontal shaft, each with condenser and each 3,000,000 gallons daily capacity; three extension furnaces, 5-ton 46-foot span hand operating traveling crane, filters in four units, each 14½ x 17½-foot, 6-inch inside dimensions and open at top, giving total filter surface 1,085 square feet; two concrete tanks and two concrete iron solution tanks; total cost, between $300,000 and $400,000.

NEW ORLEANS, LA. — Port Commission says that a $3,000,000 cotton warehouse will be erected shortly.

SHREVEPORT, LA.—Webster Sawmill Co. has been incorporated; $25,000; by T. E. Stephenson, A. D. Turner, J. A. Stephenson.

ST. BERNARD, LA.—Southern Automobile Mfg. & Supply Co.; capital, $1,000,000, has secured a site here and will erect seven factory buildings, at a cost of $700,000; R. Sidney Hernandez, architect.

AMARILLO, TEX.—Wilborn Bros., tank and culvert manufacturers, will erect a new building, to be completed about Oct. 1.

AUSTIN, TEX.—Coleman Lamp Co. has been incorporated; $10,000; by C. E. Parr, G. M. Tilford, A. E. Foley.

BYNUM, TEX.—Citizens have contributed about $11,000 for the erection of a cotton warehouse; address George W. Hamlett.

DALLAS, TEX.—City plans to erect a well-equipped machine shop on Main street.

DALLAS, TEX.—Reflecto Electric Sign Co. has been incorporated; $10,000; by E. C. Jeffress, Ira P. De Loache, T. W. Erwin.

EL PASO, TEX.—International Brick Co. has purchased a 6-acre site for a $300,000 brick plant.

GALVESTON, TEX.—Henry Cotton Co. will erect a 50 x 100-foot re-gin plant, to cost about $9,000.

HOUSTON, TEX. — Central Construction Co. will erect the Western Electric Co.'s $70,000, 2-story office and warehouse building.

HOUSTON, TEX.—J. J. Schuler, acting for the Texas Metal Co., has secured a permit for the erection of a factory for the manufacture of metal beds; $3,000 will be the first expenditure for machinery.

LITTLE ROCK, ARK. — State Highway Engineer Carter has consented to a 300-foot steel bridge over Bayou Bartholomew, Drew county; and is also considering plans for a

steel bridge over the Ouachita on the Malvern-Hot Springs road.

PINE BLUFF, ARK. — Sanders-Lambert Cotton Co. has been incorporated; $25,000; G. W. Lambert, president.

BLUFF CITY, TENN.—Bluff City Knitting Mill Co. will require motors and knitting equipment for its new plant, the buildings of which are now being completed.

CHATTANOOGA, TENN. — Chattanooga Gas & Coal Products Co. will erect coke ovens in this city.

DICKSON, TENN. — City has voted to issue $5,000 bonds for improving the waterworks.

KNOXVILLE, TENN.—Knox Stove Works will equip a department for the manufacturing nickel-plated parts for stoves.

KNOXVILLE, TENN.—Walter E. Hunt and L. J. Martin, who have purchased a water franchise at Providence, Ky., have organized the Providence Water & Utilities Co. and will equip a plant at a cost of $75,000.

MARYVILLE, TENN. — City will vote shortly on $55,000 bonds for waterworks purposes; R. C. Huston & Co., Memphis, Tenn., have plans.

MEMPHIS, TENN.—Safe-T-Lite Co. has been incorporated; $100,000; by W. G. Turner, John E. Morrison, M. G. Buckingham, et al.

MEMPHIS, TENN.—Forest Products Co. is to increase its capital from $60 000 to $125,000 for the purpose of financing improvements; W. H. Matthews, Detroit, Mich., is said to have secured the controlling interest.

NASHVILLE, TENN.—Lake County Mfg. Co. has increased its capital from $300,000 to $400,000.

NASHVILLE, TENN.—Dr. E. Gattis may establish a plant at Evansville, Ind., for the manufacture of a wire fence device.

NASHVILLE, TENN.—H. H. Mayberry will build an electric line from Nashville to Springfield, Tenn.; Davidson county is raising funds for the work.

NASHVILLE, TENN.—Nashville, Chattanooga & St. Louis railroad will build a steel coal-handling plant at Hollow Rock, Tenn.; address chief engineer at Nashville, Tenn.

NASHVILLE, TENN.—Union Iron Works will establish a foundry at Lewisburg, Tenn., to have a capacity of 150 ranges a day; address John G. Cooke.

## WESTERN STATES

WESSINGTON SPRINGS, S. D.—Citizens voted $20,000 for the construction of an electric light plant.

NORTH BEND, NEB.—City voted $21,000 for the installation of an electric light plant.

BILLINGS, MONT.—Enterprise Sheet Metal Works plans an additional shop, 50 x 130 feet, and will install machinery for the manufacture of furnaces.

LEWISTOWN, MONT. — Polmer Electric Co. has been incorporated; $15,000; by Roy R. Polson, et al.

TOWNSEND, MONT. — John Hines Sr., chairman of county commissioners is considering construction of a 500-foot steel bridge over the Missouri river at Toston.

DENVER.—Fire did $1,000 damage to machinery at the Ajax Iron Works.

PROVO, UTAH.—Keeler Automatic Headgate Co. has been incorporated; $10,000; by Joseph B. Keeler, Joseph R. Murdock, J. William Knight, Francis W. Kirkman, Karl F. Keeler, et al.

SALT LAKE CITY. — Utah Oil Refining Co. will erect a $2,000, 1-story, brick and steel boiler house.

FERNWOOD, IDAHO.—Blackwell Lumber Co., Spokane, Wash., is considering an overhead carrier system for handling logs; logging road about five miles long will built.

PLUMMER, IDAHO.—Dunkit Bros. have received a certificate from the state utilities commission for the installation of an electric generating plant.

POCATELLO, IDAHO. — J. D. Browning has been granted a franchise for the construction of a street railway system; it calls for one and a half miles the first year and the same amount in each of the following two years.

ST. ANTHONY, IDA.—Mesa Power Co. has been incorporated; $500,000; by Max Hebgen, et al.; it proposes to generate power on the Snake river.

CATHLAMET, WASH.—Estimate is being made for the construction of a municipal light plant.

HOQUIAM, WASH.—City commission will call for bids at once for an automobile combination hose and chemical wagon.

SEATTLE, WASH.—It is announced that the Pacific-Alaska Navigation Co., operating the line on the Seattle-San Francisco and Seattle-Alaska routes, will rebuild the steamship Admiral Watson; cost about $150,000.

SPOKANE, WASH. — Chicago, Milwaukee & St. Paul Railroad Co. and the Oregon-Washington Railroad & Navigation Co. will soon start work on laying out freight yards and the erection of three steel bridges, shops and roundhouse buildings.

TACOMA, WASH.—Public works commissioner will receive bids until Sept. 8 for steel for municipal car line; check for 5 per cent of bid required; $35,000 bonds will be utilized for the work.

BERKELEY, CAL.—San Francisco Sulphur Co. will erect a $10,000, 89 x 127-foot warehouse and factory, to be 37 feet high.

CHICO, CAL.—Diamond Match Co. has plans completed for a cannery; they call for a 100 x 200-foot, main building and other buildings including a warehouse and boiler room; structures will be made of corrugated iron.

EL SEGUNDO, CAL.—A $100,000, 2-story, 60 x 200-foot, brick plant for the manufacture of oil-driven tractors, will be erected here on a 6-acre site; address S. J. Smith.

LOS ANGELES, CAL.—Turbine Mfg. Co. has been incorporated; $25,000; by James Dalton, Frank E. Turner, Merrill P. Level.

LOS ANGELES, CAL. — Crowell Marine Construction Co. has been incorporated; $10,000; by J. L. Crowell, H. R. Crowell, M. E. Talman.

MERCED, CAL.—Fire destroyed the Yosemite Valley Railroad Co.'s roundhouse and machine shops; loss, $70,000.

OAKLAND, CAL. — Commercial club announced that the Dibble Air Brake Co., Salt Lake City, Utah, will move to this city.

CONTRACT, NEV.—Nevada Copper Mining, Milling & Power Co. will erect a 500-ton leaching plant at this place.

# New Trade Publications

AIR COMPRESSOR VALVES.—A 28-page bulletin issued by the Ingersoll-Rand Co., 11 Broadway, New York City, is devoted to the Ingersoll-Rogler valves for air compressing cylinders. This type of valve is illustrated and described in detail and its application to air compressors also is shown.

PORTABLE ELECTRIC TOOLS.—A new catalog containing 71 6 x 9-inch pages recently has been issued by the United States Electrical Tool Co., Cincinnati, O. Various types of electric drills, drilling stands, screw drivers, grinders, polishing motors, buffing machines, pumps for automobile tires, etc., are fully described and illustrated. Brief specifications of the tools are included giving overall dimensions, horsepower of motors, etc. A chapter devoted to general instructions regarding the care of electrical tools at the back of the catalog is of special value.

**FLEXIBLE SHAFTS.—A complete new catalog of flexible shafts, grinding machines, portable tools, etc., manufactured by the Stowe Mfg. Co., Binghamton, N. Y., has been issued recently. Illustrations, specifications, and prices of flexible shafts for every conceivable purpose are included. Considerable space, also, is allotted to specifications and illustrations of the Stowe portable emery grinding wheel, electric driven stationary grinders, variable speed, direct and alternating current motors, portable drills, etc. The catalog contains 94 pages and is provided with a comprehensive index which adds to its value for reference purposes.**

SHOVELING MACHINES. — An exceedingly interesting catalog recently has been issued by the Myers-Whaley Co., Knoxville, Tenn., describing a new form of shoveling in mines and tunnels. In many cases in underground iron mines, the ore must be shoveled from the floor of the stope into the mine cars and this entails a great deal of hand labor. The Meyers-Whaley shoveling machines, which are fully described and illustrated in this catalog, are designed to operate in drifts 47 inches or more in height and each machine will load from 10 to 25 tons of ore per hour, depending on its size and the conditions under which it operates.

PORTABLE FLOOR CRANE AND HOIST.—A 32-page booklet issued by the Canton Foundry & Machine Co., Canton, O., is devoted to this company's portable floor crane and hoist. This device is adapted to wide application in industrial plants generally, and particularly where heavy material must be handled. In addition, this hoist serves as an auxiliary to overhead cranes, relieving them of the work of handling the lighter loads and as the hoist is portable, the work can be carried to parts of the shop not commanded by large hoisting equipment. The catalog is well illustrated and shows various applications of this device in numerous different types of industrial establishments. The hoist is described in detail and a price list also is included.

DRILL HOLE COMPASS.—A circular describing the Maas patent drill hole compass has been issued by E. E. White, agent, Ishpeming, Mich. A number of letters from users of this compass are given showing that it has passed the experimental stage. The compass is used to survey drill holes to a depth of 3,000 feet for both direction and inclination. In operation, the compass is placed in a thermos bottle or glass tube with hot liquid gelatine and lowered in a water-tight phosphor-bronze case with a tube containing hydrofluoric acid. When the gelatine is cold the rods are pulled, the direction of the needle is marked on the tube which contained the acid and the direction and inclination of the hole determined from this tube in a goniometer.

# IRON AND STEEL PRICES

**Corrected up to Tuesday noon**

## PIG IRON

(Delivery Through Third Quarter.)

| | |
|---|---|
| Bessemer, valley | $14.00 |
| Bessemer, Pittsburgh | 14.90 |
| Basic, Pittsburgh | 13.90 |
| Basic, eastern Pa. | 14.00 to 14.25 |
| Malleable, Pittsburgh | 13.90 to 14.40 |
| Malleable, Chicago | 13.50 to 14.00 |
| Malleable, Philadelphia | 15.50 to 16.00 |
| Malleable, Buffalo | 13.00 to 14.00 |
| No. 1X Philadelphia | 15.00 to 15.25 |
| No. 2 foundry, Pittsburgh | 13.90 to 14.40 |
| No. 2 foundry, Cleveland | 13.75 to 14.25 |
| No. 2 foundry, Ironton | 13.00 to 13.50 |
| No. 2 foundry, Chicago | 13.50 to 14.00 |
| No. 2X foundry, Philadelphia | 14.75 to 15.00 |
| No. 2X fdry., (N. J. tidewater) | 14.25 to 14.75 |
| No. 2X foundry, Buffalo | 13.00 to 13.50 |
| No. 2 plain, Philadelphia | 14.50 to 14.75 |
| No. 2 plain, (N. J. tidewater) | 14.00 to 14.25 |
| No. 2 plain, Buffalo | 12.75 to 13.25 |
| No. 2 southern, Birmingham | 10.00 to 10.50 |
| No. 2 southern, Cincinnati | 13.25 to 13.75 |
| No. 2 southern, Chicago | 14.60 to 14.85 |
| No. 2 southern, Philadelphia | 15.00 to 15.25 |
| No. 2 southern, Cleveland | 14.35 to 14.85 |
| No. 2 southern, New York | 14.75 to 15.00 |
| No. 2 southern, St. Louis | 14.00 to 14.25 |
| Virginia 2X, Philadelphia | 15.30 to 15.55 |
| Virginia, 2X, Jersey City | 15.30 to 15.75 |
| Virginia, 2X, New Eng., all rail | 15.75 to 16.25 |
| Gray forge, (eastern Pa.) | 13.75 |
| Gray forge, Pittsburgh | 13.65 |
| Gray forge, Birmingham | 9.00 to 9.50 |
| Silveries, 8 per cent, Cleveland | 17.55 |
| Silveries, 5 per cent Birmingham | 12.50 |
| Silveries, 5 per cent, Chicago | 16.35 |
| Standard low phos., Phil. | 21.50 |
| Lebanon low phos., furnace | 17.00 to 17.50 |
| Low phos., Pittsburgh | 21.15 to 21.40 |
| Charcoal, Lake Superior, Chgo., Nos. 1 to 4 | 15.75 to 16.50 |
| Charcoal, Buffalo | 15.75 to 16.75 |
| Charcoal, Birmingham | 25.00 |
| Middlesbrough, No. 3, Phila., ex-ship | 15.00 to 15.25 |

## IRON ORE

(Lower lake ports.)

| | |
|---|---|
| Old range Bessemer, 55 per cent | $3.75 |
| Mesabi Bessemer, 55 per cent | 3.50 |
| Old range, non-Bess., 51½ per cent | 3.00 |
| Mesabi, non-Bessemer, 51½ per cent | 2.85 |

(Per unit Philadelphia.)

| | |
|---|---|
| Foreign Bess., 50 to 65 per cent | 7c |
| Foreign non-Bess., 50 to 65 per cent | 7c |

## COKE

(At the ovens.)

| | |
|---|---|
| Connellsville furnace | $1.70 to 1.75 |
| Connellsville fur. contr. | 1.75 to 1.85 |
| Connellsville foundry | 2.25 to 2.50 |
| Connellsville fdy., contr | 2.35 to 2.50 |
| Wise county furnace | 1.85 to 2.10 |
| Wise county foundry | 2.25 to 2.75 |
| Pocahontas furnace | 1.80 to 2.05 |
| Pocahontas foundry | 2.25 to 2.40 |
| New River, foundry | 2.75 to 3.50 |
| New River, furnace | 2.20 to 2.35 |

## FERRO-ALLOYS

| | |
|---|---|
| Ferro-manganese, Baltimore | $100 to 110 |
| Ferro-silicon, 50 per cent, Pbgh. | 71.00 to 73.00 |
| Ferro-silicon, 50 per cent, Phila. | 71.00 to 73.00 |
| Ferro-sil., 12 to 13 per cent, Pgh. | 22.90 |
| Ferro-sil., 11 to 12 per cent, Pgh. | 21.90 |
| Ferro-sil., 10 to 11 per cent, Pgh. | 20.90 |
| Ferro-sil., 9 to 10 per cent, Pgh. | 19.90 |
| Ferro-carbon titanium, carloads, per lb. | 8c to 12½c |

## SEMI-FINISHED STEEL

| | |
|---|---|
| Billets, Pbgh. and Yn. | $21.00 |
| Open-hearth bil., Phila. | 22.40 to 23.40 |
| Sheet bars, Pittsburgh and Yn. | 22.00 |
| Op-h'th sh. bars, Pbgh. and Yn. | 21.00 |
| Forging billets, Phila. | 25.40 to 26.40 |
| Forging billets, Pittsburgh | 26.00 |
| Wire rods, Pittsburgh | 26.00 |

## RAILS AND TRACK MATERIAL

| | |
|---|---|
| Stand. Bess., rails, Pbgh. | 1.25c |
| Stand. open-hearth rails, Pbgh. | 1.34c |
| Light rails, 8 lbs., Pbgh. or Chi. | 1.40c |
| Lgt. rails, 12 lbs., Pbgh. or Chgo. | 1.35c |
| Lgt. rails, 16 to 20 lb., Pbgh. or Chicago | 1.30c |
| Lgt. rails, 25 to 45 lbs., Pbgh. or Chicago | 1.25c |
| Relaying rails, standard, Chgo. | $23.00 to 24.00 |
| Relaying rails, light, Chicago | 21.50 to 22.50 |
| Angle bars, st. sect. Pbgh., base | 1.50c |
| Angle bars, st. sections, Chgo. | 1.50c |
| Spikes, railroad, Pbgh. | 1.40c to 1.45c |
| Spikes, railroad, Chgo. | 1.55c |
| Track bolts, Pbgh. | 2.00c |
| Track bolts, Chgo. | 2.00c |

## SHAPES, PLATES AND BARS

| | |
|---|---|
| Structural shapes, Pittsburgh | 1.20c |
| Structural shapes, Chicago | 1.38c |
| Structural shapes, Philadelphia | 1.30c to 1.35c |
| Structural shapes, New York | 1.31c to 1.36c |
| Structural shapes, San Francisco | 2.00c to 2.05c |
| Tank plates, Chicago | 1.38c |

### Freight Rates, Finished Material

From Pittsburgh, carloads, per 100 pounds to:—

| | |
|---|---|
| New York | 16 cents |
| Philadelphia | 15 cents |
| Boston | 18 cents |
| Buffalo | 11 cents |
| Baltimore | 14½ cents |
| Cleveland | 10 cents |
| Cincinnati | 15 cents |
| Chicago | 18 cents |
| Minneapolis and St. Paul | 32 cents |
| Denver | 67½ cents |
| St. Louis | 22½ cents |
| New Orleans | 30 cents |
| Birmingham | 45 cents |
| Pacific coast, (all rail) | 80 cents |
| Pacific coast, via Panama canal | 46 cents |

| | |
|---|---|
| Tank plates, Pittsburgh | 1.20c |
| Tank plates, Philadelphia | 1.30c to 1.35c |
| Tank plates, New York | 1.31c to 1.36c |
| Bars, soft steel, Pittsburgh | 1.20c |
| Bars, soft steel, Chicago | 1.38c |
| Bars, soft steel Philadelphia | 1.35c |
| Bars, soft steel, New York | 1.36c |
| Hoops, carloads, Pittsburgh | 1.25c to 1.30c |
| Hoops, less carloads, Pittsburgh | 1.30c to 1.35c |
| Bands, Pittsburgh | 1.20c |
| Shafting, carloads, Pbgh., disc. contract | 65 to 66 off |
| Shaft'g less carl'ds, Pbgh., disc. | 63 |
| Bar iron, Chicago | 1.07½c to 1.12½c |
| Bar iron, Philadelphia | 1.15c to 1.20c |
| Bar iron, New York | 1.20c to 1.30c |
| Bar iron, Cleveland | 1.20c |
| Bar iron, Pittsburgh | 1.20c to 1.25c |
| Hard steel bars, Chicago | 1.25c to 1.30c |
| Smooth finish'g mchy. steel, Chi. | 1.68c |

## SHEETS AND TIN PLATE

| | |
|---|---|
| No. 28, black, Pittsburgh | 1.95c to 2.00c |
| No. 28, black, Chicago | 2.18c |
| No. 28, tin mill, black, Pbgh. | 1.95c |
| No. 28, galvanized Pbgh. | 2.95c to 3.00c |
| No. 28, galvanized, Chgo. | 3.18c |
| No. 10, blue, annealed, Pbgh. | 1.40c to 1.45c |
| No. 10, blue, annealed, Phila. | 1.50c |
| Tin plate, 100 lb., coke, base | $3.60 to 3.75 |

## EXTRAS FOR SHEET OR TIN MILL SPECIFICATIONS

(Per hundred pounds.)

| | |
|---|---|
| Single pickled, cold rolled | 30 cents |
| Hot rolled, pickled and annealed | 25 cents |
| Full pickled, cold rolled and re-ann. | 50 cents |
| Blued stove pipe stock | 10 cents |
| Range steel | 30 cents |
| Re-squaring | 10 cents |
| Roller levelling | 10 cents |
| Patent levelling and re-squaring | 35 cents |
| Oiling sheets | 10 cents |
| Deoxidizing | 10 cents |
| Lime finish | 10 cents |
| Open hearth stamping steel | 50 cents |
| Special open hearth deep stpg. steel. | 65 cents |
| Ext. for 28 gage ov. 32 to 36-in. wide | 10 cents |

No reduction for sheets not annealed

The above extras apply on both sheet and tin mill specifications, at the same rate.

## IRON AND STEEL PIPE

(Pittsburgh.)

| | Black Butt-weld. | Galv. Butt-weld. |
|---|---|---|
| Steel, ¾ to 3 inches | 80 | 71½ |
| Iron, ¾ to 2½ inches | 70 | 61 |
| | Lap-weld. | |
| Steel, 2½ to 6 inches | 79 | 70½ |

## BOILER TUBES

| | |
|---|---|
| Steel, 3½ to 4½ inches | 73 |
| Iron, 3½ to 4½ inches | 60 |

## WIRE PRODUCTS

| | |
|---|---|
| Wire nails, jobbers, Pittsburgh | $1.55 to 1.60 |
| Wire nails, retailers, Pittsburgh | 1.60 to 1.65 |
| Plain wire, jobbers, Pittsburgh | 1.35 to 1.40 |
| Plain wire, retailers, Pittsburgh | 1.40 to 1.45 |
| Galvanized wire, jobbers, Pbgh. | 1.75 to 1.80 |
| Galvanized wire, retailers, Pbgh. | 1.80 to 1.85 |
| Polished staples, Pbgh. | 1.55 to 1.60 |
| Galvanized staples, Pbgh. | 1.95 to 2.00 |
| Barb wire, painted, jobbers, Pbgh. | 1.55 to 1.60 |
| Barb wire, painted, retail'rs, Pbgh. | 1.60 to 1.65 |
| Barb wire, galv., retail's, Pbgh. | 2.00 to 2.05 |
| Barb wire, galv., jobbers, Pbgh. | 1.95 to 2.00 |

## BOLTS AND NUTS

(Delivered within 20-cent freight radius.)

Carriage bolts, ¾ x 6 inches, smaller or shorter, rolled threads, 80 and 20; cut threads, 80 and 15; larger or longer, 75 and 15.

Machine bolts with hot pressed nuts ¾ x 4 inches, smaller or shorter, rolled, 80 and 25; cut, 80 and 20; larger or longer, 80.

Gimlet and cone point lag or coach screws, 80 and 25.

Hot pressed square, blank or tapped nuts, $6.30 off list; hot pressed hexagon blank or tapped, $7.20 off.

Cold pressed, c. and t. square, blank or tapped, $6 off; hexagon, blank or tapped, ⅝ inch and larger, $7.20; ⅞-inch and smaller. $7.80.

## RIVETS

| | |
|---|---|
| Structural rivets, Pbgh. | 1.55c to 1.60c |
| Structural rivets, Chgo. | 1.68c |
| Boiler rivets, Pbgh. | 1.65c to 1.70c |
| Boiler rivets, Chgo. | 1.78c |

## SCREWS

(New York.)

| | |
|---|---|
| Lag, gimlet and cone point | 80 and 20 |
| Coach, gimlet point | 80 |
| Standard Jack | 70 and 10 |
| Mch., cut thread, flat head | 50 and 10 |
| Mach., cut thread, round head | 50 and 10 and 10 |
| Mch., cut thread, fillister hd. | 40 and 40 and 10 |
| Mch. rolled thread, flat head or round head | 80 and 10 |
| Set screws, iron | 75 and 10 and 10 |
| Set screws, steel, per cent advance over iron | 25 |
| Square head cap screws | 70 and 10 and 10 |
| Hexagon head cap screws | 70 and 10 and 10 |
| Fillister head cap screws | 60 and 10 and 10 |
| Flat head wood screws | 10 and 10 and 5 |
| Round head wood screws | 10 and 10 and 5 |

## CAR WHEELS

| | |
|---|---|
| 33-inch engine truck wheels | $22.50 |
| 36-inch engine truck wheels | 23.50 |
| 33-inch tender wheels | 18.50 |
| 36-inch passenger train car and tender wheels | 20.50 |
| 33-inch freight car wheels | 15.50 |

All with standard 2½ inch rims and minimum standard hubs, usual extras applying for thicker rims and larger hubs; all f. o. b. cars, Pittsburgh.

# IRON AND STEEL PRICES

**Corrected up to Tuesday noon**

## STEEL SHEET PILING

(Pittsburgh.)

| | |
|---|---|
| Base sizes | 1.55c to 1.60c |

## TWISTED REINFORCING BARS

(Soft steel, Pittsburgh mill.)

| | |
|---|---|
| ¾-inch and larger | 1.25c |
| ⅝-inch | 1.30c |
| ½-inch | 1.35c |
| ⅜-inch | 1.50c |
| ¼-inch | 1.75c |

## TACKS

(New York.)

| | Discount. |
|---|---|
| American carpet tacks.. | 90 and 20 and 10 and 10 |
| American cut tacks.... | 90 and 20 and 10 and 10 |
| Railroad tacks | 90 and 50 and 10 |
| Gimp tacks | 90 and 20 and 10 and 10 |
| Finishing nails | 70 |

## WIRE ROPE

| | |
|---|---|
| Galvanized, iron and steel | 47½ and 2½ |
| Bright, iron and steel | 55 and 2½ |

## COLD ROLLED STRIP STEEL

(Subject to regular extras.)

| Base price Cut to length | | 0.10 to 0.19 Carbon |
|---|---|---|
| Hard. | Soft. | 1½ in. and wider. |
| 2.85 | 3.10 | 0.100 and thicker |
| 2.95 | 3.20 | 0.050 to 0.099 inc. |
| 3.10 | 3.35 | 0.035 to 0.049 inc. |
| 3.35 | 3.75 | 0.031 to 0.034 inc. |
| 3.60 | 4.00 | 0.025 to 0.030 inc. |
| 3.80 | 4.20 | 0.020 to 0.024 inc. |
| 4.70 | 5.20 | 0.017 to 0.019 inc. |
| 5.10 | 5.60 | 0.015 and 0.016 |
| 5.95 | 6.45 | 0.013 and 0.014 |
| 6.55 | 7.05 | 0.012 |
| 6.90 | 7.40 | 0.011 |
| 7.25 | 7.75 | 0.010 |
| Coils | | |
| 2.75 | 3.00 | 0.100 and thicker |
| 2.80 | 3.05 | 0.050 to 0.099 inc. |
| 2.95 | 3.20 | 0.035 to 0.049 inc. |
| 3.10 | 3.50 | 0.031 to 0.034 inc. |
| 3.20 | 3.60 | 0.025 to 0.030 inc. |
| 3.30 | 3.70 | 0.020 to 0.024 inc. |
| 3.60 | 4.10 | 0.017 to 0.019 inc. |
| 4.00 | 4.50 | 0.015 and 0.016 |
| 4.70 | 5.20 | 0.013 and 0.014 |
| 5.05 | 5.55 | 0.012 |
| 5.40 | 5.90 | 0.011 |
| 5.75 | 6.25 | 0.010 |

## CAST IRON PIPE

| | |
|---|---|
| Three to 24 in., Cleveland | $22.35 to 22.80 |
| Four-inch, water, Chicago | 26.50 |
| Six to 12 inches, Chicago | 24.50 |
| Larger sizes, Chicago | 24.00 |
| Six-inch, water, New York | 20.50 to 21.50 |
| Four-inch, water Birmingham | 19.50 |
| Six-inch and larger, Birmingham | 19.50 |

Gas pipe, $1 per ton higher than water.

## WAREHOUSE PRICES

| | |
|---|---|
| Steel bars, Chicago | 1.65c |
| Steel bars, Cleveland | 1.80c |
| Steel bars, Cincinnati | 1.70c to 1.85c |
| Steel bars, Philadelphia | 1.75c |
| Steel bars, New York | 1.80c |
| Steel bars, St. Louis | 1.70c |
| Iron bars, Chicago | 1.65c |
| Iron bars, Cleveland | 1.75c |
| Iron bars, St. Louis | 1.65c |
| Iron bars, Cincinnati | 1.65c to 1.75c |
| Iron bars, Philadelphia | 1.70c |
| Iron bars, New York | 1.65c to 1.70c |
| Hoops, Chicago | 2.15c |
| Shapes and plates, Chicago | 1.75c |
| Shapes and plates, Cleveland | 1.90c |
| Shapes and plates, Cincinnati | 1.80c to 1.90c |
| Shapes and plates, St. Louis | 1.80c |
| Shapes and plates, Philadelphia | 1.75c |
| Shapes and plates, New York | 1.85c |
| No. 10 blue ann. sheets, Chgo. | 1.95c |
| No. 10 blue ann. sheets, Cleve. | 2.05c |
| No. 10 blue ann. sh., St. Louis | 2.00c |
| No. 10 blue ann. sheets, Cinci. | 1.95c |
| No. 28 black sheets, Chgo | 2.55c |
| No. 28, black sheets, Cleveland | 2.45c |
| No. 28 black sheets, Cincinnati | 2.45c to 2.55c |
| No. 28 black sh., St. Louis | 2.55c |
| No. 28 galv. sheets, Chgo | 3.55c |
| No. 28 galv. sheets, Cleveland | 3.35c |
| No. 28 galv. sheets, Cincinnati | 3.40c to 3.55c |
| No. 28 galv. sheets, St. Louis | 3.55c |

## IRON AND STEEL SCRAP

(Net Tons.)

| | |
|---|---|
| No. 1 railroad wrought, Chgo. | $ 8.50 to 8.75 |
| No. 1 railroad wrought, Cleve. | 9.50 to 10.00 |

## Freight Rates, Coke

Connellsville regions, per 2000 lbs., to:—

| | |
|---|---|
| Baltimore | $1.80 |
| Buffalo | 1.85 |
| Chicago | 2.50 |
| Cleveland | 1.60 |
| Detroit | 2.10 |
| East St. Louis | 2.80 |
| Joliet | 2.50 |
| Louisville | 2.50 |
| Milwaukee | 2.70 |
| New York | 2.85 |
| Philadelphia | 2.05 |
| Pittsburgh | .75 |
| Richmond, Va. | 2.94 |
| Toledo | 1.85 |
| Valley Furnaces | 1.20 |
| Cincinnati | 2.00 |

| | |
|---|---|
| No. 1 railroad wrought, St. L. | 7.75 to 8.00 |
| No. 1 railroad wrought, Cinci. | 8.00 to 8.50 |
| No. 2 railroad wrought Chgo. | 8.00 to 8.25 |
| No. 2 railroad wrought, St. L. | 7.50 to 7.75 |
| Arch bars and transoms, Chgo. | 11.50 to 12.00 |
| Arch bars and transoms, St. L. | 11.00 to 11.50 |
| Knuckles, coup. and spr'gs, Chgo. | 9.00 to 9.50 |
| Knuckles, coup. and spr'gs, St. L. | 9.25 to 9.50 |
| Shafting, Chicago | 11.50 to 12.00 |
| Shafting, St. Louis | 13.00 to 13.50 |
| Steel car axles, Chgo. | 11.50 to 12.00 |
| Steel car axles, St. Louis | 11.75 to 12.25 |
| Locomotive tires, Chicago | 9.00 to 9.50 |
| Locomotive tires, St. Louis | 8.75 to 9.25 |
| Cut forge, Chicago | 8.00 to 8.25 |

## Freight Rates Via Panama Canal

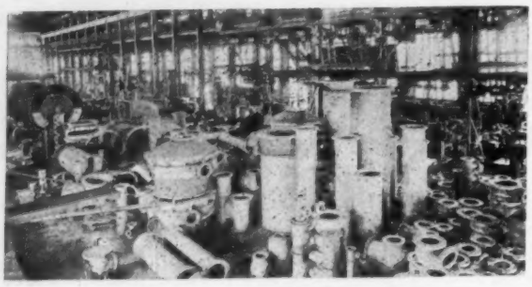
Rates on finished materials, including plates, shapes, bars, wire, nails, etc., to Pacific coast points via Panama Canal, per 100 lbs., in car load lots, exclusive of insurance and dockage.

| | |
|---|---|
| From New York | $0.30 |
| From Pittsburgh | .46 |
| From Youngstown | .48 |
| From Niles | .48 |
| From Wheeling | .46 |
| From Steubenville | .46 |
| From Johnstown | .44½ |
| From Coatesville | .39 |
| From Steelton | .40 |
| From Bethlehem | .37½ |
| From Cleveland | .49 |
| From Chicago | .60 |

| | |
|---|---|
| Pipes and flues, Chicago | 6.50 to 6.75 |
| Pipes and flues, Cleveland | 7.75 to 8.25 |
| Pipes and flues, St. Louis | 5.75 to 6.25 |
| No. 1 cast, Chicago | 9.25 to 9.75 |
| No. 1 cast, Cleveland | 10.00 to 10.50 |
| No. 1 cast, Cincinnati | 8.50 to 9.00 |
| No. 1 cast, St. Louis | 9.50 to 10.00 |
| No. 1 busheling, Chicago | 7.25 to 7.50 |
| No. 1 busheling, Cleveland | 8.25 to 8.50 |
| No. 1 busheling, Cincinnati | 5.75 to 6.25 |
| No. 1 busheling, St. Louis | 7.25 to 7.50 |
| No. 2 busheling, Chicago | 5.75 to 6.00 |
| No. 1 boiler plate, cut, Chgo. | 6.25 to 6.75 |
| No. 1 boiler plate, cut, Buffalo | 9.00 to 9.50 |
| No. 1 boiler plate, cut, St. L. | 6.00 to 6.50 |
| Boiler punchings, Chicago | 8.50 to 9.00 |
| Cast borings, Chicago | 4.50 to 5.00 |
| Cast borings, Cleveland | 6.00 to 6.25 |
| Cast borings, Cincinnati | 4.25 to 4.75 |
| Cast borings, St. Louis | 4.00 to 4.50 |
| Machine shop turnings, Chgo. | 5.00 to 5.25 |
| Machine shop turnings, Cleve. | 5.00 to 5.25 |
| Machine shop turnings, Cinci. | 4.25 to 4.75 |
| Machine shop turnings, St. L. | 4.50 to 5.00 |
| Malleable agl., Chicago | 7.75 to 8.25 |
| Malleable agricultural St. Louis | 7.50 to 8.00 |
| Malleable, railroad, Chicago | 8.25 to 8.50 |
| Malleable, railroad, Cincinnati | 6.50 to 7.00 |
| Malleable, railroad, St. Louis | 7.50 to 8.00 |
| Angle bars, iron, Chgo. | 11.50 to 12.00 |
| Angle bars, iron, St. Louis | 10.00 to 10.50 |
| Angle bars, steel, Chgo. | 8.25 to 8.75 |
| Angle bars, steel, St. Louis | 9.25 to 9.50 |
| Stove plate, Chicago | 8.50 to 8.75 |
| Stove plate, Cleveland | 7.75 to 8.00 |
| Stove plate, Buffalo | 9.75 to 10.00 |
| Stove plate, Cincinnati | 6.50 to 7.00 |
| Stove plate, St. Louis | 8.25 to 8.75 |
| Bundled sheet, Cincinnati | 4.00 to 4.50 |
| Wrought iron pil'g plates, Clev. | 13.00 |

(Gross Tons.)

| | |
|---|---|
| Heavy melting steel, Pbgh. | $11.50 to 11.75 |
| Heavy melting steel, Buffalo | 10.00 to 10.50 |
| Heavy melting steel, Chicago | 9.50 to 9.75 |
| Heavy melting steel, Cleveland | 10.00 to 10.50 |
| Heavy melting steel, Cincinnati | 9.00 to 9.50 |
| H'vy melting steel, eastern Pa. | 10.50 to 11.00 |
| Heavy melting steel, New York | 9.00 to 9.25 |
| Heavy melting steel, St. Louis | 11.00 to 11.50 |
| Bundled sheet Buffalo | 6.25 to 6.50 |
| Grate bars, Buffalo | 9.50 to 10.00 |
| Grate bars, New York | 7.00 to 7.50 |
| No. 1 railroad wr'ght, east Pa. | 12.00 to 12.50 |
| No. 1 railroad wrought, Pbgh. | 11.50 to 11.75 |
| No. 1 R. R. wght. New York | 10.25 to 10.50 |
| No. 1 R. R. wrought, Buffalo | 11.00 to 11.50 |
| Shafting, New York | 12.00 to 12.50 |
| Pipes and flues, New York | 8.50 to 8.75 |
| Pipes and flues, eastern Pa. | 10.50 to 11.00 |
| Mch. shop turnings, New York | 6.25 to 6.50 |
| Machine shop turnings, Buffalo | 5.50 to 6.00 |
| Mch. shop turnings, Pbgh. | 7.75 to 8.00 |
| Mch. shop turnings, eastern Pa. | 8.50 to 9.00 |
| Cast borings, New York | 6.50 to 7.00 |
| Cast borings, eastern Pa. | 8.50 to 9.00 |
| Cast borings, Buffalo | 6.00 to 6.50 |
| Cast borings, Pittsburgh | 8.50 |
| Stove plate, (Jersey points) | 9.00 to 9.25 |
| Stove plate, Pittsburgh | 8.75 to 9.00 |
| Stove plate, eastern Pa. | 8.50 to 9.00 |
| Shoveling steel, Chicago | 8.75 to 9.00 |
| Shoveling steel St. Louis | 8.00 to 8.25 |
| Reroll'g rails, 5 ft. & ov., Pbgh. | 13.00 |
| Reroll. rails, 5 ft. & ov., Chgo. | 11.25 to 11.50 |
| Reroll. rails, 5 ft. & ov., Cleve. | 11.00 to 11.50 |
| Reroll. rails, 5 ft. & ov., E. Pa. | 12.00 to 12.50 |
| Reroll. rails, 5 ft. & ov. St. L. | 11.25 to 11.50 |
| Steel rails, short, Chicago | 10.00 to 10.25 |
| Steel rails, short, Cleveland | 12.50 to 13.00 |
| Steel rails, short, St. Louis | 10.50 to 10.75 |
| Iron rails, Cleveland nom. | 13.25 to 13.75 |
| Iron rails, Cincinnati | 10.25 to 10.75 |
| Iron rails, eastern Pa. | 14.00 to 15.00 |
| Iron rails, St. Louis | 11.00 to 11.25 |
| Iron rails, Pittsburgh | 13.00 to 13.50 |
| Frogs, switches, guards, Chgo. | 9.50 to 9.75 |
| Frogs, switches & g'rds. St. L. | 10.50 to 10.75 |
| Car wheels, (iron), Pittsburgh | 11.50 to 11.75 |
| Car wheels, (steel), Pittsburgh | 12.75 to 13.00 |
| Car wheels, Chicago | 10.75 to 11.00 |
| Car wheels, eastern Pa. | 11.00 to 11.50 |
| Car wheels, Buffalo | 12.00 to 12.50 |
| Car wheels (N. J. points) | 10.50 to 11.00 |
| Car wheels, St. Louis | 11.00 to 11.25 |
| Iron axles, Pittsburgh | 20.00 to 21.00 |
| Iron axles, Cincinnati | 19.00 to 20.00 |
| Iron axles, eastern Pa. | 20.00 to 21.00 |
| Iron axles, Buffalo | 21.50 to 22.00 |
| Iron axles, Chicago | 18.25 to 18.50 |
| Steel car axles, New York | 12.50 to 13.00 |
| Steel car axles, Buffalo | 15.00 to 15.50 |
| Steel car axles, Cleveland | 14.00 to 16.00 |
| Steel car axles, eastern Pa. | 14.50 to 15.00 |
| No. 1 busheling, Buffalo | 8.50 to 9.00 |
| No. 1 busheling, Pittsburgh | 9.00 to 9.50 |
| No. 2 busheling, Buffalo | 6.00 to 6.50 |
| Low phosphorus steel, Buffalo | 15.00 to 15.50 |
| Low phosphorus steel, Pbgh. | 14.00 to 14.50 |
| Low phos. steel, eastern Pa. | 14.50 to 15.00 |
| No. 1 forge, eastern Pa. | 8.00 to 8.50 |
| No. 1 cast, eastern Pa. | 12.00 to 12.50 |
| No. 1 cast, Pittsburgh | 11.50 to 11.75 |
| No. 1 heavy cast (N. J. points) | 11.50 to 12.00 |
| Boiler plate, Cleveland | 8.50 to 9.00 |
| Mall. iron, agricul., Cleveland | 9.00 to 9.50 |
| Mall. iron R. R. Cleveland | 10.25 to 10.75 |
| Malleable, railroad, Pittsburgh | 9.50 to 10.00 |
| Mall. R. R., Buffalo | 10.75 to 11.25 |
| Mall., R. R. east. Pa. | 9.00 to 9.50 |
| Bundled sheet, Pittsburgh | 8.50 to 8.75 |
| Bundled sheet, Cleveland | 7.50 to 8.00 |



Center bay of machine shop, Best Mfg. Co.'s works

Special Iron Castings
in weights up to 50 tons

Poured and machined in our own shops. Let us submit estimates on your requirements.

Best Manufacturing Co.
Pittsburgh, Pa.

RIVETS, BURRS,
BOLTS and SCREWS
The Falls Rivet Co. Kent, O.

Standard Tin Plate Company
CANONSBURG, PA.
Tin Plates, Black Plates, Terne Plates
ALL GRADES, COATINGS, AND FINISHES
Our recent increased capacity for Common Terne and Black Plates Solicits further patronage
*Also Tin Plates of Our Usual Good Quality*

High-Grade Tin and Terne Plates
Genuine Charcoal and Iron Terne Plates
The Carnahan Tin Plate & Sheet Company
Canton, Ohio
Specialties → Blued and Polished Steel, Deep Drawing Steel, Automobile Sheets, Full Finished Enameling and Ceiling Stock, Etc.

## A Cast Iron of Unusual Structure

(*Continued from page* 480.)

an increase in strength, we would note that the tensile strength of this iron averaged 42,000 pounds per square inch. Most of our irons, which approximate the structure shown in Figs. 2 and 3, run between 32,000 and 36,000 pounds per square inch.

*Free From Shrinkage*

Concerning the question of shrinkage, which will probably occur to the practical foundryman, we might state that this iron is admirable in its freedom from the shrinkage which is liable to occur with many other structures, notably those higher in combined carbon. The graphite is liberated at a time during the solidification when the freezing shrinkage is large, thus counteracting the tendency to sponginess; later on in the cooling, the transformation of combined carbon, which is present in the form of dissolved carbide into the plates of free carbide which form, with ferrite, the matrix of pearlite, causes again a slight expansion which decreases the amount of total shrinkage occurring in the casting.

## Vacation Allowance and Pension System

(*Continued from page* 485.)

the most unique of the three; the results under this system, too, are more immediate than under the other two. Such workmen as have been in the employ of the company for two consecutive years are permitted to submit their records, and if these are found satisfactory, the men are entitled to receive payments to cover the vacation, which has been set by the company as the first week in July. Those who have been in the employ of the company for more than two years and less than five, will be allowed one-half week's earnings, while those who have been with the company five years will receive a full week's pay. A week's wages are figured as 1/52 of the total amount of combined piece-work and day-work pay, received through the year. In case the company during any year does not shut down its plant for a week, it has the option of paying the equivalent in extra wages.

These systems are to be administered by a committee of five, known as the J. H. Williams & Co. Employes' Welfare Committee. Two members of this committee are appointed by the company, another, a shop man, is selected by these two, and the J. H. Williams & Co. Mutual Aid Association chooses the remaining two, thus constituting a committee in which the representation by the men and the company is divided with unusual equality. This committee decides finally and absolutely on all matters connected with life insurance and pension payments and vacation allowances, making the payments out of a special fund maintained by the company.

The company has established this general welfare plan as an appropriate tribute to the memory of James H. Williams, founder of the business, who died in 1904. Mr. Williams, during his lifetime, always took an active interest in all matters pertaining to the working and living conditions of his employes. He was the first manufacturer to install shower baths and similar conveniences for the workmen, making this innovation in 1893, long before the present liberal policy, manifested by employers generally to employes, had had its inception. Such treatment of his men, Mr. Williams believed, reflected itself in their greater contentment, besides contributing

indirectly to the greater success of the company. The maintenance of this policy probably has had some bearing upon the fact that the company now is one of the largest manufacturers of stock drop forgings in the country, since its great success has been attributed in part to the loyalty of the men.

## Made Steel Works Castings

The Prescott Co., Menominee, Mich., has made about 1,500 tons of gray iron castings for the new plant of the Minnesota Steel Co., at Duluth. These castings include parts for the open-hearth furnaces, soaking pits, coke ovens, ammonia condensors, merchant and rail mills. The Prescott Co. operates a foundry 400 feet long and 100 feet wide, equipped with three cupolas and provided with electric traveling cranes, compressed air outlets, molding machines and other appliances for turning out castings rapidly and economically.

One of the most convenient things for a carbon tool hardener to have near his forge or furnace is a small pocket compass. This should be set on a wooden box or stool in such a position that the heated tool may be swung over it from time to time as the heat progresses. When the tool ceases to move this needle, the time to quench it has been reached. In using a compass for this purpose, however, it must be remembered that iron hooks or tongs will cause the needle to deflect, and it is well to transfer the tool to a brass hook as soon as it is taken from the fire.

The Lumen Bearing Co., Buffalo, has issued a booklet entitled "Bronze Alloys and Babbitts", which describes bronze, brass and aluminum alloys made by this company for various requirements. The data included cover physical tests both chilled and sand cast bars and in addition, Brinnel hardness results are included. The physical tests of the chilled and sand cast bars are among the first that have been given for these various alloys and should prove of value to all users of non-ferrous metals.

A new catalog covering traveling cranes recently has been issued by the Whiting Foundry Equipment Co., Harvey, Ill. The details of Whiting cranes of various types are fully illustrated and carefully described and a large number of illustrations are published showing Whiting crane installations in various shops throughout the world. These illustrations are grouped in an attractive and convenient manner and similar types of cranes are shown together.

The Simplex Wire & Cable Co., Boston, has issued a 16-page booklet which describes briefly the manufacture and uses of a cable which is protected by two steel tapes wound spirally in reverse directions. It is said that steel taped cable has a field peculiarly its own. It must be used where considerations of safety and civil pride will not permit the use of overhead wire, and where a conduit system is too expensive.

It is very frequently necessary to show the old, experienced workmen that the guard is necessary for a less competent man who may operate his machine or come near it, even if it is not necessary to protect him. In this way his hostility may be overcome when it could not be overcome in any other way.

Probably the handiest lathe chuck for the jobbing shop is the four-jawed independent chuck having stepped, reversible jaws. These will hold almost any shaped piece, and hold it firmly.


CONVERTER STEEL CASTINGS

ANYTHING UP TO 2500 POUNDS

Our large modern plant, consisting of a foundry 160x80 feet; machine shop 400x80 feet, and a large pattern shop, complete in every detail, enables us to turn out promptly and at the lowest price anything in Converter Steel Castings up to 2500 pounds, and in gray iron up to 10 tons.

*WRITE US.*

The Adamson Machine Co.
AKRON OHIO

SMALL STEEL CASTINGS
OF THE BEST QUALITY ARE OUR SPECIALTY.
WRITE US.
FARRELL-CHEEK STEEL FOUNDRY CO.
SANDUSKY, OHIO

TISCO MANGANESE STEEL CASTINGS
FOR SEVERE SERVICE
Taylor-Wharton Iron & Steel Co.
High Bridge, New Jersey

Woodmansee & Davidson, Inc.
ENGINEERS
All Kinds of Power Plants
SPECIALISTS in the Industrial Application of PRODUCER GAS
MILWAUKEE, Wells Bldg. CHICAGO, 1st National Bank

ROUND WIRE
IRON AND STEEL
All finishes, for Ropes, Screen Cloth, Brooms, Spring Mattresses, Clips, Staples, etc.
Also Stone Wire and Bundling Wire.
We make a specialty of Fine Wires.
THE SENECA WIRE & MFG. CO., Fostoria, O.

# Opportunities

**Men Wanted**
Minimum, 50 words, $1.00. Each additional word, 2c. All capitals, 50 words, $1.50. Each additional word, 3c.

**Position Wanted**
Minimum, 25 words, 50c. Each additional word, 2c. All capitals, 25 words, 75c. Each additional word, 3c.

**Miscellaneous Classified**
Minimum, 25 words, $1.00. Each additional word, 4c. All capitals, 25 words, $2.00. Each additional word, 8c.

## Men Wanted

**UNDERSIGNED COUNSEL WILL CONFIDENTIALLY** negotiate preliminaries for important executive, technical, administrative and professional positions, insuring strictest privacy. Not an agency, but a highly-endorsed, high grade method of negotiating preliminaries only, for $3,000 to $12,000 men. Send address only for explanation. R. W. Bixby, Lock Box 134-E9, Buffalo, N. Y.

**WANTED A CHEMIST OR METALLURGIST** to manage open-hearth furnaces for a steel foundry in the East; state experience, reference and salary expected. Address Box 237, THE IRON TRADE REVIEW, Cleveland, O.

**WANTED: — FIRST-CLASS FOREMAN** for structural steel shop (1,000 tons capacity) in Havana City, Cuba. Must be fully experienced in all departments of shops, active and competent to handle Spanish speaking labor. Permanent position for right man. Give references, experience and salary expected. American Steel Co. of Cuba, Box 654, Havana, Cuba

**WANTED:—COMPETENT AND EXPERIENCED** salesmen for Corliss engines, water-tube and tubular boilers. Murray Iron Works Co., Burlington, Iowa.

**WANTED TO GET IN TOUCH WITH** executive for chilled car wheel foundry to make only high class wheels; must be high class man who understands manufacture for quality and also can direct selling; all communications strictly confidential. Address J, care of THE IRON TRADE REVIEW, Cleveland, O.

**THE BEST WAY TO GET A GOOD POSITION** in drafting or engineering is to file an application direct with some of our clients who are depending on us to get competent and experienced applicants for their vacant positions. Send stamp for blank and list of vacant positions. The Cleveland Engineering Agency Co., Rose building, Cleveland, O.

## Positions Wanted

**FOUNDRY FOREMAN—23 YEARS' EXPERIENCE**, up-to-the-minute in modern practice molding machine expert, iron, bronze, steel and malleable. Write for references. Address Box 186, THE IRON TRADE REVIEW, Cleveland, O.

**MANAGER OR SUPERINTENDENT OF** foundry or manufacturing company where ability and results are required; full information as to ability and references upon application. A-1 position only will be considered. Address Box 219, THE IRON TRADE REVIEW, Cleveland, O.

**OPEN FOR A POSITION AS FOUNDRY** superintendent and manager; an up-to-date American foundry man (no fake hot air), but sound clean castings and a clean man; heavy and light work machine molding cupola practice; can come at once. Address New England, care of THE IRON TRADE REVIEW, Cleveland, O.

**MASTER MECHANIC WANTS POSITION**; EXPERIENCED IN OPERATION, CONSTRUCTION AND DESIGN, BLAST FURNACES, OPEN HEARTHS, ROLLING MILLS, ELECTRIC AND STEAM POWER PLANTS, SHOP PRACTICE, TECHNICAL EDUCATION. ADDRESS BOX 229, THE IRON TRADE REVIEW, CLEVELAND, O.

**EXPERT SERVICE.**

**MANUFACTURERS** desirous of improving their organization, production or arrangement of plant can secure the TEMPORARY SERVICES of a SUCCESSFUL MANUFACTURER; 20 years' experience in shop, designing, accounting, selling and executive departments. Will render service from advice to actually establishing modern productive methods, cost accounting, redesigning of products or rearrangement of plant. Unusual opportunity to better your business at small cost. Not merely an efficiency engineer but an experienced and trained expert through actual management and successful results in a number of enterprises. Long training under the TAYLOR SYSTEM OF SCIENTIFIC MANAGEMENT. Would not agree to render service unless satisfactory results can be accomplished. Address Box 201, THE IRON TRADE REVIEW, Cleveland, O.

**WANTED: — JOB AS LOCOMOTIVE** craneman; can handle the Browning and McMyler; several years' experience; will go any place; can give the best of references. Address, H. S. Alexander, care of N. W. P. R. R., Fort Seward, Cal.

**YOUNG, AGGRESSIVE, COMPETENT** man, fully qualified by seventeen years' successful statistical, economic production and financial experience as OPERATING MANAGER OF STEEL PLANTS, desires operating metallurgical or executive position with rolling mill or foundry doing steady business, who seeks to improve manufacturing conditions. Address Box 143, THE IRON TRADE REVIEW, Cleveland, O.

**SUPERINTENDENT OR MANAGER**; merchant or steel works blast furnaces anywhere. Technical graduate. Wide experience operating and managing. Can perfect organization and produce good results. Address Box 228, THE IRON TRADE REVIEW, Cleveland, O.

**SUPERINTENDENT: STEEL WORKS** and rolling mills, graduate chemist and practical metallurgist, with 20 years' experience in the production and rolling of steel desires to make a change. Address Box 231, THE IRON TRADE REVIEW, Cleveland, O.

**TECHNICAL ADVERTISEMENT** writer over three years; mechanical graduate; engineering instructor 6 years; solid in theory and practice; employed; single; age 30. Will consider $3,000. Address Box 234, THE IRON TRADE REVIEW, Cleveland, O.

**BLAST FURNACE SUPERINTENDENT** with wide experience in the production of Ferro Manganese, various grades of Spiegel, etc., can show A-1 record and give A-1 references. Address Box 235, THE IRON TRADE REVIEW, Cleveland, O.

**SUPERINTENDENT OR GENERAL** foreman; position wanted in malleable iron foundry; practical, up-to-date; A-1 references. Address Box 236, THE IRON TRADE REVIEW, Cleveland, O.

**CHEMIST: — COLLEGE GRADUATE**, five years' experience in general inorganic analyses, including one year's work on uranium and vanadium alloys. Address Box 238, THE IRON TRADE REVIEW, Cleveland, O.

**GENERAL MANAGER OF WORKS** wants situation. Experienced in organizing, producing, estimating and getting the business. TWENTY YEARS' EXPERIENCE IN MACHINE SHOP, BOILER, STRUCTURAL AND PLATE WORK OF ALL DESCRIPTIONS. Practical mechanic, no experiments. At present working 300 men. High class references. Address at once, 508 South Frisco Ave., Tulsa, Okla.

**WANTED:—SITUATION AS FOREMAN** of core room; have had experience in gray iron, steel, also two years in malleable iron. Address Box 239, THE IRON TRADE REVIEW, Cleveland, O.

## Investments

**SALES MANAGER WANTED—A HIGH**-grade sales manager who knows the implement game, required to invest some capital; give age, experience, former employer, salary expected; factory located on Missouri river. Address B 12, THE IRON TRADE REVIEW, Cleveland, O.

## Sales Agents

SOLE AGENCY
or
SOLE SELLING RIGHTS

British firm of high standing with modern organization and selling system for handling business on a large scale, and with valuable connections in the United Kingdom, Colonies, India, etc., desires Agency or Selling Rights for Iron, Steel, Metals, Machinery and Hardware, or any Engineering specialties, including Electrical goods, etc., and are prepared to guarantee accounts. Highest Bankers references. Apply "Irostemet" care of Deacons, Leadenhall St., London, E. C.

## For Sale

**IRON AND BRASS FOUNDRY IN** thriving Michigan city for sale; good business; location, transportation facilities, etc. the best; will be sold quick. If interested, address Box 230, THE IRON TRADE REVIEW, Cleveland, O.

## R. R. Laborers

**BEST OF AMERICANS AND FOREIGN**ers for track and construction work; we get the right kind of help supplied free of charge to employers; your patronage solicited. We are also boarding contractors, one man or a train load laborers and tradesmen for foundry and factory. Write, wire or phone. Diamond Railway & Contractors Supply Co., 31 S. Canal St., Chicago, Ill. Phone Franklin 3529.